COLUMBIA LIBRARIES OFFSITE
HEALTH SCIENCES RESTRICTED
HR00275379

THE LIBRARIES

COLUMBIA UNIVERSITY

HEALTH SCIENCES
LIBRARY

NOV 27 1978 JDR

Digitized by the Internet Archive
in 2014

https://archive.org/details/newyorkmedicaljo1131unse

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

PHILADELPHIA MEDICAL JOURNAL

AND THE

MEDICAL NEWS

A SEMIMONTHLY REVIEW OF MEDICINE AND SURGERY

VOLUME CXIII.

JANUARY TO JUNE, 1921, INCLUSIVE

NEW YORK
A. R. ELLIOTT PUBLISHING CO
1921

COPYRIGHT, 1921, BY A. R. ELLIOTT PUBLISHING COMPANY.

LIST OF CONTRIBUTORS TO VOLUME CXIII.

Those whose names are marked with an asterisk have contributed editorial articles.

Aaron, Charles D., M. D., Detroit, Mich.
Agatston, S. A., M. D.
Apfel, H., M. D., Brooklyn.
*Arrowsmith, Hubert, M. D., F. A. C. S., Brooklyn, N. Y.
Ashby, Winifred, B. S., M. S., Rochester, Minn.
Asnis, Eugene J., M. D., Philadelphia.
Atwell, Wayne J., Buffalo, N. Y.

Babcock, W. Wayne, M. D., F. A. C. S., Philadelphia.
Bailey, John H., M. D., Brooklyn, N. Y.
Ballenger, Edgar G., M. D., F. A. C. S., Atlanta, Ga.
Barker, Lewellys F., M. D., Baltimore.
Barker, Walter C., M. D., Philadelphia.
Barnes, George Edward, B. A., M. D., Herkimer, N. Y.
Behrend, Moses, M. D., Philadelphia.
Besse, P. M., M. D., Geneva, Switzerland.
Bick, H., M. D.
Blair, Thomas S., M. D., Harrisburg, Pa.
Blau, Arthur I., M. D.
Blumgarten, A. S., M. D., F. A. C. P.
Boas, Ernest P., M. D.
*Bolduan, Charles F., M. D., Washington, D. C.
Bram, Israel, M. D., Philadelphia.
Brav, Aaron, M. D., Philadelphia.
Briggs, L. Vernon, M. D., Boston, Mass.
*Brink, Louise, A. B.
Broadwin, I. T., M. D.
Buchanan, J. Arthur, M. D., Rochester, Minn.
Buckley, Albert C., Philadelphia.
Bulkley, L. Duncan, M. D.
Bullard, E. A., M. D., F. A. C. S.
Burns, Frank, M. D., Cincinnati, Ohio.
Burns, Joseph P., M. D., Philadelphia.
Butsch, J. L., M. D., Ph. D., Rochester, Minn.
Butts, Donald C. A., M. D., Philadelphia.

Callison, James G., M. D.
Carmody, Thomas Edward, M. D., Denver, Colo.
Cecil, Russell L., M. D.
Clark, L. Pierce, M. D.
*Clouting, Charles A., M. D., London.
Cohen, Harry, M. D.
Cohen, Samuel, M. D., Philadelphia.
Coon, C. E., M. D., F. A. C. S., Syracuse, N. Y.
Crane, Claude G., M. D., Brooklyn, N. Y.
Crile, George W., M. D., F. A. C. S., Cleveland, Ohio.
*Cumston, Charles Greene, M. D., Geneva, Switzerland.
Cyriax, Edgar F., M. D. (Edin.), London.

Deaver, John B., M. D., Philadelphia.
De Brun, Harry Schultz, M. D.
Dewess, A. M., Philadelphia.
*Donnelly, William Henry, M. D., Brooklyn, N. Y.
Drueck, Charles J., M. D., Chicago.

Eidelsberg, Joseph, M. D.
Einhorn, Max, M. D.
Eising, Eugene H., A. M., M. D.
Elder, Omar F., M. D., Atlanta, Ga.
*Elliott, George, M. D., Toronto.
Ellison, Everett M., A. M., M. D., Washington, D. C.
Ezickson, William J., A. B., M. D., Philadelphia.

Faught, Francis Ashley, M. D., Philadelphia.
Finklepearl, Henry, M. D.
*Foster, Matthias Lanckton, M. D., New Rochelle, N. Y.
Fowler, Robert H., M. D.
Frankel, Bernard, M. D.
Frantz, Morris H., M. D.
Friedman, G. A., M. D.
Friedman, Joseph, M. D., Brooklyn.
Friedman, Joseph H., M. D.
Freudenthal, Wolff, M. D.

Galland, Walter I., A. B., M. D.
Gardner, James A., M. D., F. A. C. S., Buffalo, N. Y.
Garretson, William V. P., M. D.
Geyser, Albert C., M. D.
Gies, William J., M. D., D. Sc.
Gilbride, John J., A. M., M. D., Philadelphia.
Goetsch, Emil, M. D., F. A. C. S., Brooklyn.
Goldman, Harry, M. D.
Goldstein, Hyman I., M. D., Camden, N. J.
Gordon, Alfred, M. D., Philadelphia.
Gordon, Murray B., M. D., F. A. C. P., Brooklyn.
Goutzait, P., M. D., Geneva, Switzerland.
Grad, Herman, M. D.
Graham-Mulhall, Sara, M. D.
Greenfield, Arthur D.
Greenfield, Samuel D., M. D., Brooklyn.

Haines, Wilbur H., B. S., M. D., Philadelphia.
Hallock, David H., A. M., M. D., Southampton, N. Y.
Hamilton, James A., Ph. D.
Hammer, A. Wiese, M. D., Philadelphia.
Highman, Walter James, M. D.
Hirshfeld, Samuel, M. D.
Hodskins, Morgan B., M. D., Palmer, Mass.
Hoxie, George Howard, A. M., M. D., Kansas City, Mo.
Hühner, Max, M. D.
Husik, J. A., A. B., M. D., Brooklyn.
Hyslop, George H., M. D.

Iglauer, Samuel, B. S., M. D., Cincinnati, Ohio.
Illoway, H., M. D.
Imperatori, Charles J., M. D.

Jackson, Chevalier, M. D., Philadelphia.
Jacoby, Adolph, M. D.
*Jelliffe, Smith Ely, A. M., M. D., Ph. D.

Kahn, Max, M. D.
Kaplan, David M., M. D.
Keller, Henry, M. D.
*Kellogg, Elenore.
Kelly, Howard A., M. D., Baltimore.
Kempf, Edward J., M. D.
Kennedy, J. W., M. D., F. A. C. S.
*Kerby, Ernest F., M. D.
*King, Douglas, M. D.
*Knopf, S. Adolphus, M. D.
Knowlton, Frank P., M. D., Syracuse, N. Y.
Kouindjy, Pierre, M. D., Paris, France.

Landsman, Arthur A., M. D.
Lapenta, Vincent Anthony, M. D., Indianapolis, Ind.
Lazarus, David, M. D.
Levy, Louis Henry, M. S., M. D., New Haven, Conn.
Levy, Moise D., M. D., Galveston, Texas.
Levyn, Lester, M. D., Buffalo, N. Y.
Lewinski-Corwin, E. H., Ph. D.
*Lieb, Charles, M. D.
Limerick, O. Victor, M. D.
Lintz, Joseph, A. M., M. D.

Lipshutz, Benjamin, M. D., Philadelphia.
Lisser, Hans, M. D., San Francisco.
Lowsley, Oswald Swinney, A. B., M. D., F. A. C. S.
Luttinger, Paul, M. D.
Lydston, G. Frank, M. D., Chicago.
Lynch, Robert C., M. D., New Orleans, La.

McCaskey, Donald, M. D.
McNulty, John J., M. D.
Maddren, Russell F., M. D.
Marshall, C. J., Philadelphia.
Martin, Sergeant Price, M. D., Buffalo, N. Y.
Meding, C. B., M. D.
Melman, Ralph J., M. D., Philadelphia
Melville, Stanley, M. D., London.
Menninger, Karl A., M. S., M. D., Topeka, Kansas.
Meyer, William H., M. D.
Miller, Edwin B., M. D., Philadelphia.
Miller, George I., M. D., Brooklyn.
Miller, Joseph W., M. D.
Mills, H. Brooker, M. D., F. A. C. P., Philadelphia.
Minton, Henry M., M. D., Philadelphia.
Morley, W. H., M. D., Pontiac, Mich.
Morris, M. Ford, Jr., M. D., Atlanta, Ga.
Mosher, Eliza M., M. D., Brooklyn, N. Y.
Murphy, John W., A. M., M. D., Cincinnati, Ohio.
Mutch, Jane, B. A., London.
Mutch, N., M. A., M. D., F. R. C. P., London.

Neuhof, Harold, M. D.
Neumann, William, M. D., Brooklyn.
Niles, Walter L., M. D.
Norman, N. Philip, M. D.
Northrop, Herbert L., M. D., F. A. C. S., Philadelphia.

O'Day, J. Christopher, M. D., F. A. C. S., Honolulu, Hawaii.
Osborne, Oliver T., M. D., New Haven, Conn.
Owen, Hubley R., M. D., Philadelphia.

Pancoast, Henry K., M. D., Philadelphia.
Patterson, Ellen J., M. D., F. A. C. S., Pittsburgh, Pa.
Pfeiffer, William, M. D., F. A. C. S., Brooklyn.
*Phelps, Edith B.
Porter, William Henry, M. D.
Pottenger, F. M., M. D., Monrovia, Cal.
Prentice, Alfred C., M. D.
Pritchard, H. B., M. D., Syracuse, N. Y.
Pyle, Walter L., M. D., Philadelphia.

Reed, Charles A. L., M. D., Cincinnati, Ohio.
Reede, Edward Hiram, M. D., Washington, D. C.
Renaud, George L., M. D., Detroit, Mich.
Riddell, Hon. William Renwick, LL. D., Toronto, Canada.
Ridpath, Robert F., M. D., Philadelphia.
Roberts, John B., M. D., Philadelphia.
Rodman, Harry, M. D.
*Rogers, James F., M. D., New Haven, Conn.
Rose, Robert Hugh, M. D.
Rosenberger, Randle C., M. D., Philadelphia.
Rosenbluth, M., M. D.
Rosenheck, Charles, M. D.
Rout, Ettie A. (Mrs. Hornibrook), London, England.
Rubenstone, A. I., M. D., Philadelphia.
*Rucker, W. C., M. D., United States Public Health Service, Canal Zone.
Rutz, Anthony A., M. D., Brooklyn, N. Y.

*Sajous, Charles E. de M., LL. D., M. D., Sc. D., Philadelphia.
*Sajous, Louis T. de M., B. S., M. D., Philadelphia.
Sanders, A. S., M. D.
Saphir, J. F., M. D.
Satterthwaite, Thomas E., M. D.
*Scarlett, Rufus B., M. D., Trenton, N. J.
Schroeder, Theodore, Cos Cob, Conn.
Schwartz, Louis H., A. B., M. D.
Shapiro, Isidor F., M. D.
Sheehan, J. Eastman, M. D.
Shuman, John W., M. D., F. A. C. P., Sioux City, Ia.
Shumway, Edward A., M. D., Philadelphia.
Siegel, Alvin E., M. D., Philadelphia.
Smith, Ethan H., M. D., San Francisco.
Solis-Cohen, Myer, A. B., M. D., Philadelphia.
Spencer, William H., M. D., Philadelphia.
*Steinbugler, William F. C., M. D.
Stevens, J. Thompson, M. D., Montclair, N. J.
Stivelman, B., M. D., Bedford Hills, N. Y.
Strachstein, A., M. D.
*Stragnell, Gregory, M. D.
Strauss, Spencer G., A. B., M. D.

Takeuchi, Kumpei, M. D., Toyko.
Taylor, K. P. A., A. B., M. D., Philadelphia.
Tenner, Arthur S., M. D.
Thomson, J. Oscar, M. D., Canton, China.
Tilton, Benjamin T., M. D.
Timme, Walter, M. D.
Tousey, Sinclair, M. D.
Tuttle, Homer, M. D., Ithaca, N. Y.

Van Hook, Weller, A. B., M. D., Chicago.
*Vedin, Augusta, M. D.

*Warburton, Gladys Bagot.
*Waterson, Davina.
Watson, W. R., M. D., Philadelphia.
Wells, Walter A., M. D., Washington, D. C.
Wheelon, Homer, M. D., St. Louis, Mo.
*Whitford, William, Chicago.
*Williamson, Jefferson.
Wishart, D. J. Gibb, M. D., Toronto, Canada.
Witherbee, W. D., M. D.
*Wolbarst, Abr. L., M. D.
Wright, Jonathan, M. D., Pleasantville, N. Y.
Wurtz, Walter J. M., M. D., Buffalo, N. Y.

Young, Anne, M. D., Dr. P. H., D. T. M., University, Alabama.

Zigler, M., M. D.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CXIII, No. 1. NEW YORK, SATURDAY, JANUARY 1, 1921. WHOLE No. 2196.

Original Communications

OPERATION FOR RENAL CALCULI.

BY HOWARD A. KELLY, M. D.,
Baltimore, Md.

Within the past forty years the surgical profession has run a gamut of changes in the variety of operations for stone in the kidney and the renal pelvis. It is my desire here to present what I consider to be the simplest and best procedure and one which I hope approximates a final solution of this important question in the commoner cases. Back of the seventies of the last century kidney operations were extremely rare, and however excruciating the pain the patient might suffer in his loin, coupled as it might be with hemorrhages and pyuria, his treatment was symptomatic and sedative. How well I remember the course of just such a case in the person of one of my most intimate boy friends, handled throughout its course by the late distinguished surgeon, my professor, D. Hayes Agnew. With growing boldness in surgery following G. Simon's initiative in his elaborate experimental work on the extirpation of the kidney (1872), and with the security given by antisepsis, the next step naturally was the exposure and opening of the kidney, often literally like an oyster, from stem to stern, hunting for the stone which was too often elusive. I had such a case in one of my closest friends. He suffered for a long time from hematuria and sudden attacks of intense posterior lumbar pain; often when driving his buggy through the streets of a distant large city at night, when the pain struck him he would double up and fall to the floor until it passed. William Osler, who knew him, suggested it might only prove to be a focal nephritis, but I felt more confident of stone. According to promise I opened his kidney from end to end, and found—nothing. He recovered from this and was relieved of his pains, but he died several years later in a uremic convulsion following a surgical operation on the axillary glands for a gas bacillus infection contracted in an operation on an infected arm.

Following this came the era of some more intelligently determined and directed operations, due to the introduction of the waxed tip catheter in the nineties, an intelligence soon augmented by the gradually perfected x ray diagnosis, which not only defined the disease, like the waxed catheter, but also located the position, and often the number and size of the stones. With this greater precision in diagnosis the incision into the kidney naturally was often more limited in its extent, although still appallingly extensive, and the damage done was still considerable, and the hemorrhage sometimes threatening. Then came an era of pyelotomies for pelvic stones, particularly encouraged by an avascular posterior incision between the vascular watersheds of the kidney, when the cut had to be extended up into the kidney, thus lessening the hemorrhage.

I exclude from consideration massive and extensively branching calculi, where there is nothing to be done but to excise the kidney, when its function is wholly in abeyance, or at most to incise it from end to end in the effort to remove the calculus without extensive tearing of the tissues.

My own active personal association with, and interest in, this field, has passed through several of the stages cited above. Soon after discovering the method of direct aerocystoscopic examinations, with the pelvis elevated, I waxtipped my bougies and so was often able in favorable stone cases to get a scratch mark on the wax, and so to make an immediate diagnosis at the very first examination, of a stone in the ureter or kidney. A great advantage of this method is that it is carried out on the examining table and does not require any preparation of the patient, or the delays incident to a reference to an x ray expert often in another clinic. With due care the wax tip method is both certain and satisfactory, and I still use it as a routine, while using the x ray also.

In my effort to save the kidney from injury, I then began to resort extensively to pyelotomy, drawing especial attention to the necessity of preserving the fibrous sheath investing the pelvis of the kidney, described by Dr. William J. Mayo and myself. This sheath also investing ureter and bladder, is of particular value in both of these latter situations as a binder in closing incised wounds.

Lastly I worked out the operation which I am about to describe; at first blush an apparent return to our former cruder plan of splitting open the kidney, but differing *toto coelo* in being done with a full understanding of the exact status of the organ, as to functional value, site and number of stones as well as their size, and with a definite technic adapted to the particular case. This procedure is accompanied with a minimal and usually insignificant trauma, as yet with no serious hemorrhage; it is rapid in its execution, and usually avoids any urinary leakage, such as was not infrequently under older methods. On account of its rapidity and the

Copyright, 1921, by A. R. Elliott Publishing Company.

slight damage done, I am in the habit of calling it at the operating table my "sneaking operation." Let me describe it:

A patient comes with a pyuria or a hematuria, or both, and often with a one sided pain. The mixed urine is taken by catheter from the bladder, and if a woman, the vesical ends of the ureters are palpated carefully through the vagina. She is then cystoscoped in the knee chest posture, and the suspicious side catheterized with a waxed tip catheter (Fig. 1 A). The urine flowing directly from that side is collected in a test tube, while the urine discharging from the other side is collected transvesically by an ordinary vesical catheter in a test tube. At the same time the functions of the kidneys are estimated by examining the separated urines and by injecting phenolsulphonephthalein. After one or two hours, or sometimes after a few minutes, if the differentiation of the urines is sufficiently marked to the naked eye, the renal catheter is removed and the waxed tip is examined with a lens for scratch marks (Fig. 1 B). An x ray picture then taken also shows the calculus or calculi either in the renal pelvis or up in one or more of the calices (Fig. 2).

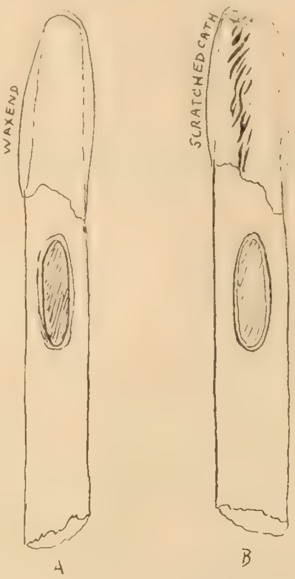


FIG. 1.—A, a ureteral catheter from 1¾ to 2 mm. in diameter —the end coated with wax. B, the same catheter after it has been gouged or scratched by coming into contact with the stone in the pelvis of the kidney. Note that the wax covered end is sometimes hammered down as shown here.

FIG. 2.—Shadowgraph of the stone in the pelvis of the left kidney under an unusually long last rib.

THE OPERATION.

The best incision is through the posterior superior lumbar triangle. In many cases I pull the tissues widely open with my two hands by a blunt dissection, thus securing enough room to introduce four or five fingers, the whole hand. After breaking through Gerota's capsules by simple traction with forceps on the perirenal fat it is often possible to draw the entire kidney out onto the surface. Whether it comes out in this way, or whether it has to be detached by gentle manipulations on all sides, separating it particularly in its upper pole, in most cases, it is displaced onto the loin without the slightest damage, and dealt with there in the succeeding stage. Often, however, knowing exactly the position of the stone, I operate upon the kidney *in situ,* and make a direct opening into its lower pole, or again simply free and tilt down the upper pole, so as to bring it within reach for the extraction of the calculus. In either case, whether treated *in situ* or outside, the operator gently palpates the kidney between the thumb and fingers, including the renal pelvis, to see whether the stone can be felt and located. If it is found it can then be thrust up toward the dorsum with the fingers to facilitate the enucleation. If it is not so located, then with the x ray plate before him as a guide the next step is to take a fine needle about six cm. in length, fastened in a cork, and to thrust this into the kidney, where it is expected the stone will be found. Once the needle touches the stone, it is left (Fig. 3) *in situ,* while a small incision (averaging about two cm. in length, but varying with the size of the stone) is made through the renal capsule. An instrument is then taken in hand (Fig. 4) which is neither blunt nor sharp, and which can be

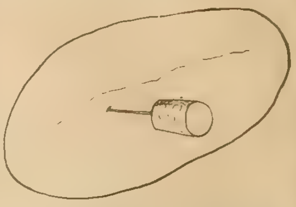


FIG. 3.—Contour of kidney, needle mounted on cork thrust into contact with stone, and left there.

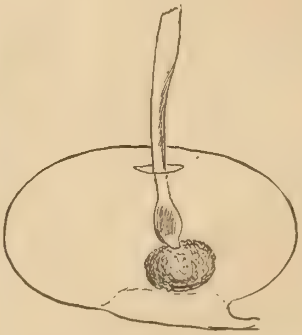


FIG. 4.

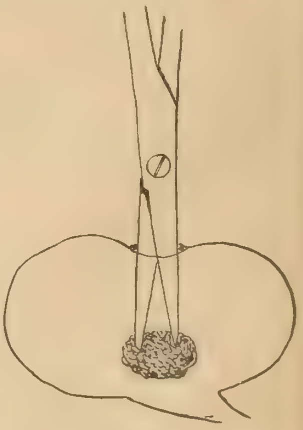


FIG. 5.

FIG. 4.—Spatulate instrument neither blunt nor sharp thrust through the dorsum of kidney after making a short incision in its capsule, and brought in contact with stone, which in most instances can be pushed up towards the cortex to meet the instrument.

FIG. 5.—Scissors used occasionally to enlarge the opening when necessary. A little blunt tearing in this way as a rule provokes no marked hemorrhage. The scissors can be used very well to replace the instrument (Fig. 4) entirely.

pressed against the finger without cutting it. This is driven through the renal substance down to the stone. A narrow pair of forceps (Fig. 6) is then inserted and the stone caught and extracted. If the removal is clean and clear, and there is only a mild infection, I close the wound entirely with one or two mattress sutures (Fig. 7); as the bleeding is usually minimal, a single catgut mattress suture may suffice. The external abdominal wound is then closed with a small drain. Sometimes it is an advantage, if the stone is a little large, to carry the scissors into the pelvis until the stone is touched, and on withdrawing to open them a little, thus enlarging the opening in a blunt way (Fig. 5). Such a procedure as I have just detailed is splendidly adapted to a stone which is out in one of the calices, and not far distant from the cortex. I have removed in this way, with almost no damage at all, a stone from the upper and lower poles of the same kidney, first tilting up one end and then the other. I also prefer this operation for stone in the pelvis of the kidney as well, pushing the stone up toward the dorsum.

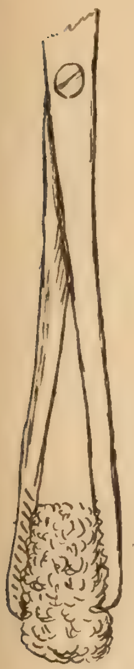


FIG. 6.—Narrow forceps grasping and removing stone.

CASE.—Let me illustrate my thesis further and dwell on this important matter by citing a concrete case, that of Mrs. E. M., No. 8911, who came to me February 10, 1920, with a diagnosis of left renal calculus, made by a skillful consultant and a friend in Buffalo. I took an x ray (Fig. 2) as confirmatory of the diagnosis, and without detailing the various differentiation tests and preliminary examinations made, I proceeded with the operation. The usual posterior incision was made through the posterior superior lumbar triangle, and the kidney freed and delivered at the incision. Gentle palpation fore and aft showed the presence of the stone in the renal pelvis. A fine cambric needle was then inserted through the back of the kidney, avoiding the vascular lines, and left *in situ*, touching the stone. A little incision was made through the capsule, and the blunt instrument shown (Fig. 3) pushed through the kidney and through the renal pelvis until it touched the stone, when both it and the needle were withdrawn, and the stone grasped with the forceps (Fig. 4) and lifted out. One mattress suture was placed through the kidney near the hilum with a blunt flat curved semicircular needle and tied gently, just tight enough to control the circulation in the limited area near the pelvis. Two catgut sutures were then placed in the wound, uniting the capsule of the kidney, and the kidney was restored to its position back of the peritoneum, and the muscles brought together with catgut, a small iodoform drain being left in the lower part. Recovery was rapid without any leakage, and she left the hospital on March 1st. Frequently twelve to fourteen days are long enough for the convalescence. The sketches used in the text were made to illustrate this case. I prefer this operation even when the calculus is in the pelvis of the kidney and easily accessible, in almost all cases.

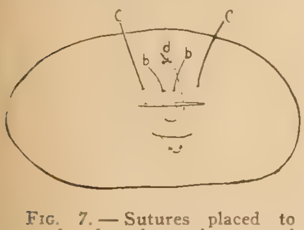


FIG. 7.—Sutures placed to control the hemorrhage and unite the capsule. The outermost suture is often put in just above the pelvis of the kidney using rather fine catgut; a and b close the upper parts of the wound and the capsule.

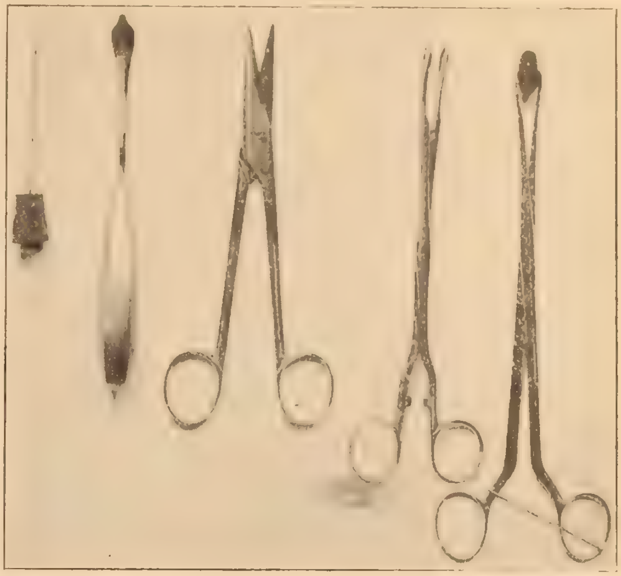


FIG. 8.—With the exception of a flat, blunt pointed needle these are the few simple instruments used in locating the stone, opening the dorsum of the kidney, and removing the stone; a, the fine needle used to find the exact position of the stone; b, the spatulate instrument neither blunt nor sharp which is plunged through into the pelvis of the kidney; c, scissors sometimes used to enlarge the opening a little; d, the stone forceps used for the removal of the calculus when it is somewhat larger; narrow forceps used to extract a small calculus.

Renal Hematuria.—Edward A. Young (*Surgery, Gynecology and Obstetrics,* November, 1920) concludes that: 1. The cause of renal hematuria can be demonstrated in all but a very small proportion of cases. 2. Kidney bleeding of unknown origin has been known to be enough to threaten life and require nephrectomy. 3. A horseshoe kidney, a slightly movable kidney, a varix of a renal papilla, may exist without the possibility of positive preoperative diagnosis. 4. In a few instances the split function may show considerable damage on the bleeding side and the pyelogram a considerable deviation from the normal, a combination which should require exploration; but these cases are very rare and operation as a routine exploratory procedure in cases of hematuria of unknown origin is unwise, as there is no assurance that it will have any effect on the progress of the bleeding. 5. In a fair number of these cases a later nephritis has been proved to be the cause of trouble. 6. It is reasonable to believe that in a majority of these cases there is an early unrecognized nephritis or a prenephritic condition which can be the cause of hematuria, and that this condition may go on to a progressive damage of the kidney.

DANGERS TO LIFE ASSOCIATED WITH GALLSTONE DISEASE AND THEIR PREVENTION.

By Benjamin T. Tilton, M. D.,
New York.

Every individual with gallstones encounters certain definite dangers of a complication which may change what seems to be a simple, though painful, local manifestation into a condition of affairs which may prove fatal. This may happen during any period of gallstone disease and, in fact, may be the first occurrence which demonstrates unmistakably to the patient or physician the fact that gallstones are present. Indefinite digestive disturbances which may be attributed to the stomach may be present for many months, when out of a clear sky an acute attack of cholecystitis or a sudden jaundice lays the patient low. More frequently a patient suffers for months or years from intermittent attacks of gallstones before one of these dangerous emergencies arrives.

There are four chief dangers that may threaten the life of a carrier of gallstones: 1. Acute suppurative or gangrenous cholecystitis; 2, cholangitis; 3, malignant disease of the gallbladder, and, 4, operation in delayed cases.

Acute suppurative or gangrenous cholecystitis is ushered in with excruciating pain in the right hypochondrium, sometimes a chill, rising temperature, and usually vomiting. The pain frequently radiates to the right shoulder. Examination reveals marked abdominal rigidity, a mass caused by the distended gallbladder and adherent omentum, a very high leucocyte and characteristically high polynuclear count. Jaundice is usually absent, but if present may be caused by pressure of enlarged glands on the common duct. The diagnosis should be easily made.

Operation should not be delayed in the severer types of cases. Sepsis, perforation of the distended or gangrenous gallbladder may occur. Simple drainage of the gallbladder is the operation of choice in the severe cases, especially those that have been delayed to the detriment of the patient's general condition. Mortality from this complication of gallstones is usually due to delay in operation or to the attempt of a too radical operation. Cholecystectomy gives a high mortality when performed on a fat subject with a highly placed suppurating or gangrenous gallbladder, especially if performed after forty-eight hours.

Cholangitis usually implies that one or more gallstones have entered the common duct and caused stoppage of the flow of bile with resulting infection. The most characteristic symptom is jaundice. This should always be regarded as a danger signal, as the patient has entered a stage of the disease which increases greatly the risk to life. Chills, intermittent fever, sweats and prostration frequently accompany the jaundice, and if allowed to persist may result fatally. More frequently the obstruction is temporarily relieved by the stone being passed or dropping back, the bile flows again into the intestine, and all the symptoms disappear. The choice of the time for operation in these cases is a matter of judgment on the part of the surgeon. Operation is more hazardous at the height of the attack and in the presence of jaundice, but if the symptoms persist more than forty-eight hours and the patient's general condition is growing worse from the absorption of septic bile, operation offers the best chances and should not be further delayed. Here also the simpler and shorter operation for drainage of the gallbladder will meet the vital indications and save the patient's life in cases where the patient would succumb to the more complicated and prolonged operation of choledochotomy and removal of the stones in the common duct. If the patient is fortunate enough to recover from the attack of cholangitis under medical treatment he should not be allowed to run the dangers of another such attack and operation in the interval is the safest procedure. At this time removal of the gallbladder with its stones, and removal of the stones in the common duct, followed by drainage of the latter by means of a tube, are the procedures of choice. It cannot be emphasized too strongly that one attack of jaundice associated with stones indicates operation in the absence of other factors that may contraindicate operations in general.

Malignancy starting in the gallbladder is not a rare complication of gallstones and is, of course, a most serious one. Unfortunately, in most cases the carcinoma is too far advanced when diagnosed to admit of complete surgical removal. Metastases in the liver are not amenable to surgery, and it is only when the disease is localized in the wall of the gallbladder that surgery is successful. These are the cases that are operated upon under the diagnosis of chronic cholecystitis and in which the carcinoma is found by accident before it has spread to the substance of the liver. Every chronic thickened gallbladder with stones has the possibility of a malignant change, and hence should not be allowed to remain. The appearance of jaundice in these cases not associated with signs of obstruction of the common duct means involvement of the liver by the metastatic growth ,and hence is a most unfavorable sign. Operation in these cases is rarely successful.

The history given by patients with carcinoma of the gallbladder is usually one of repeated gallstone attacks extending over a period of several years. One is always struck by the pathos of the thought that in these cases operation at the beginning would have avoided the tragedy of a miserable death from cancer of the gallbladder and liver starting from the prolonged irritation of the stones which were allowed to remain so many years in the gallbladder.

Operation in delayed cases of cholelithiasis is often hazardous. This has already been pointed out as true of the acute cases of suppuration, gangrene of the gallbladder, and obstruction of the common duct associated with cholangitis. It is also true of the chronic cases which are often allowed to go on for fifteen or more years. Important degenerative changes occur in the myocardium and kidneys, which render the patient a poor operative risk. Under these conditions operation must not be undertaken hurriedly and without adequate examination and preparation. If the blood pressure is too low, the heart action irregular, or functional tests of the kidneys insufficient, these must be corrected before operation. But even with these precautionary measures the operation is often dangerous in these long delayed cases and certainly much more so than in the early periods of the disease before degenerative changes have begun. It must be borne in mind that delayed operations are as a rule more difficult and prolonged owing to more complicated pathology. One encounters firm adhesions between the gallbladder and intestines or omentum, possibly a communicating opening into the intestine, marked thickening and contraction of the gallbladder, all of which make the dissection difficult and prolonged and add materially to the risks incident to delayed operation. The contrast between a cholecystectomy on an unthickened nonadherent gallbladder and one on a sclerosed adherent and deeply embedded one is most striking to the surgeon and the onlooker both as regards the difficulty of the technic as well as the valuable time expended on the dissection. The separate exposure and ligation of the cystic duct and artery have become much more difficult and the subsequent danger of secondary hemorrhage and leakage of bile from slipping of the ligatures are much increased. The removal of the stones from the common duct and ampulla of Vater and drainage of the duct add to the operative risk and often call for the highest degree of technic in order to be successfully performed. All these dangers can be avoided by operation in the early stages of the disease before the onset of complicating inflammatory changes and migration of stones from the gallbladder into the ducts. The conclusion is unavoidable that early operation in cholelithiasis is strongly indicated, and that only in this way can the present high mortality of this serious disease be lowered.

14 East Fifty-eighth Street.

PATHOGENESIS AND PHYSIOPATHOLOGY OF GALLBLADDER AND BILIARY TRACT LESIONS.

By Vincent Anthony Lapenta, M. D.,
Indianapolis, Ind.

The recent advancement in our knowledge of focal infections in general has necessitated a revision of our conceptions of the pathogenesis of many diseases, and incidentally has forced us to view many disorders from a physiopathological viewpoint, rather than from that of morbid anatomy alone. This change in our viewpoint constitutes a great step forward in itself, since this method enables us to detect diseases in their incipiency, and often, by our knowledge of the pathogenetic process, we are enabled to formulate effective preventive treatment.

Diseases of the gallbladder and biliary ducts comprise a group of abdominal syndromes of common incidence. In fact, gallbladder affections are second in occurrence only to lesions of the appendix. Pathologists report the presence of gallbladder lesions associated with calculi in from five to seven per cent. of all autopsy cases. European pathologists have reported even a larger percentage.

OCCURRENCE OF GALLBLADDER LESIONS IN RELATION TO AGE AND SEX.

The incidence of gallbladder diseases increases with age. It is far more common after the age of thirty than at any preceding time in life, the greatest number of occurrences taking place between thirty-five and sixty years. While not very common, gallbladder lesions, especially of the acute infectious type, are not rare in younger people and even in children. Reid (1) has made a collective study of acute cholecystitis in children, following typhoid fever. We have ourselves observed this complication in children. In our first series of 114 gallbladder cases, we had two cases of acute cholecystitis of probable hematogenous origin; one in a boy of eleven years and the other in a girl of seven. Both of these patients had suffered several attacks of tonsillitis. In the boy's case, no bacteriological study was made of the bile and gallbladder; in the girl's case, presenting an acute suppurative cholecystitis, a cholecystectomy was performed, with biliary drainage secured through a choledochostomy. Study of the common duct bile, on several occasions, gave persistently negative findings. The disease seemed to be confined entirely to the gallbladder. The histopathological study of the gallbladder wall showed the presence of active inflammation, injection of vessels, round cell infiltration, desquamation of the surface epithelium, small necrotic foci, and, here and there, small coagula of plastic lymph. Both in the tissues and in the pus, it was possible to demonstrate a short chain streptococcus. A study of the discharge of the tonsillar crypts of the same individual revealed the same organism. The patient was later directed to have her tonsils removed.

Women are far more susceptible to gallbladder diseases than men. Hubbard and Kimpton (2), in a series of four hundred cases, found a ratio of three to one in frequency. Jacobson (3) reports the incidence of four to one in a series of cases at the Peter Bent Brigham Hospital. Among the predisposing factors, in a way accounting for this greater frequency of gallbladder lesions in women, may be mentioned their greater tendency to a sedentary life, pregnancies with their concomitant stress on hepatic function, and high blood cholesterol content—a constant concomitant of gestation.

PHYSIOPATHOLOGY OF GALLBLADDER DISEASES.

Before we can hope to get a firm grasp of the pathogenesis of these lesions, and even before we can attempt to draw any instructive conclusions on their surgical and medical treatment, we must attempt to get a clear understanding of the physiology of the biliary apparatus and develop from this our physiopathological conception.

The bile represents a continuous secretion of the hepatic cell, little if any influenced by the taking of food. But it is not discharged continuously into the duodenum. During gastric digestion, the amount of bile entering the duodenum is minimal; the amount begins to increase rapidly, as soon as protein cleavage products with acid chyme begin to enter the duodenum from the pylorus, the height being reached when intestinal digestion is at its peak. This clearly shows the necessity of a morphological and physiological mechanism to store the bile during the time that its presence into the duodenum is not needed. Such an anatomicophysiological mechanism is represented by the gallbladder and the sphincter of Oddi, a neuromuscular mechanism, controlling the opening of the common duct into the duodenum.

In 1887 Oddi undertook the study of the functions of the gallbladder by performing cholecystectomy in a large number of dogs. This operation had already been performed by Zambeccari on the advice of Galileo. Oddi's animals all survived the operation, without exhibiting any untoward phenomena. On killing some of these animals, long after the operation, he found a dilatation of the extrahepatic ducts, the common duct in some instances being two to four times the original calibre. Most characteristic was the dilatation of the cystic duct stump, which uniformly assumed a gallbladder shape, showing Nature's attempt to reestablish integrity of the gallbladder sphincter mechanism. These findings led Oddi to assume the presence of this mechanism, which in later researches he was able to discover. This epoch making discovery was made by Oddi (4) in 1887. This sphincter, composed of fibres completely different and independent from those of the duodenal coat, is easily distinguishable even with the naked eye in the lower animals; it is not so easily distinguishable in man, without adequate preparation, on account of the thinness of the muscular coats of the duodenum, although physiologically, in the human, it seems to possess a more highly specialized function. Oddi demonstrated that the sphincter can withstand a pressure of fifty mm. of mercury or 675 mm. of water. By a series of elaborate researches Oddi (5) also demonstrated a special nerve mechanism and demonstrated the special characteristics of the ganglia supplying the sphincter and their independence of the plexuses of Auerbach and Meisner. He traced its reflex centre in the spinal segment and succeeded in giving a complete explanation of this special nerve mechanism. This extraordinary great part of his research was later on confirmed by the work of many eminent physiologists; particularly prominent of which was the confirmation of Oddi's researches by Doyon (6), who succeeded not only in completely confirming Oddi's work but also in establishing the special cytological characteristics of the ganglia, controlling the innervation of the sphincter. On the interrelated physiology of the gallbladder and Oddi's organ, Bruno (7) made in 1889 the most classical contribution. By excising a circular piece of duodenum surrounding the common duct sphincter, thereby preventing any injury to its muscle fibres and innervation, and, by stitching it to the abdominal wall, he was able to observe the discharge of bile during fasting and during feeding, and also the influence of the composition of foods on the secretion of bile.

A noteworthy, recent, confirmatory contribution to the original work of Oddi has recently been made by Mann (8). He has confirmed the finding of the dilatation of the duct after cholecystectomy, and its absence, when the sphincter of Oddi is divided at the same time that cholecystectomy is performed. He, too, has emphasized the interrelation of the sphincter of Oddi and the gallbladder. Mann further states that the gallbladder adds considerable mucus to the bile, and that this mucus is absent in bile coming from the hepatic duct.

PATHOGENESIS OF GALLBLADDER AND BILIARY TRACT LESIONS.

There has been a recent attempt to divide these lesions into certain clinical groups and to establish certain etiological factors preponderatingly dominant of each group. While this method has undoubtedly shed considerable light on the subject, I fear that, after all, it will lead us back into the old ontological nosographism and prevent us from viewing pathogenesis from a physiopathological viewpoint. It seems to me that it would materially simplify our study if we should divide these lesions into three general classes, namely:

1. A—Acute angiocholitis and cholecystitis, with and without calculi.
   B—Acute cholecystitis, with our without calculi.
2. A—Chronic angiocholitis and cholecystitis.
   B—Chronic cholecystitis, with or without calculi.
3. A—Cholelithiasis with chronic infection of the gallbladder.
   B—Cholelithiasis, without demonstrable infection of the gallbladder or bile.

The purpose of this physiopathological classification is to emphasize in the mind of the clinician the following points:

A. The existence of a diffuse, acute, infectious process, involving the entire biliary tract. These acute processes may or may not be associated with stone. In most instances, the formation of calculi takes place, when the process passes into the chronic stage, following attenuation of infection. These acute lesions are of course amenable to accurate treatment, when the latter is well based on etiological factors, which can usually be established.

B. The existence of primary gallbladder infections, both acute and chronic, without involvement of the balance of the biliary tract.

C. The existence of both biliary tract and gallbladder lesions, in the primary acute form, due to attenuated infection of hematogenous origin.

D. The existence of cholelithiasis in the gallbladder and ducts, without acute or chronic infection possibly due to a persistent hypercholesterinemia.

Little if any importance is now attached to the theory of ascending infection from the duodenum, since both from anatomical and physiological reasons, this seems improbable. Of the avenues of infection we must consider that of portal origin, and that coming from systemic bacteremias through the hepatic artery itself and directly to the gallbladder through the cystic artery. There does not seem to be sufficient evidence to consider an avenue of infection through the lymphatic circulation, since the deflux of the lymph stream seems to be away from, rather than toward, these structures. Gilbert and Dominici (9) produced cholecystitis and angiocholitis experimentally, by subcutaneous inoculation of attenuated typhoid cultures, in rabbits, and colon bacilli in dogs. Any lesion of the intestinal epithelium which can permit the passage of bacteria into the portal radicles, must necessarily be considered as potentially productive of biliary tract infection; and the infection of the gallbladder can then take place through the infected bile. In this instance, we must consider a primary insult to the hepatic cell itself; the gallbladder mucosa and particularly the crypts of Luscka becoming subsequently infected. The gallbladder can, however, be directly infected by bacteria brought to its structural elements by the cystic artery, from any focal infection or bacteremia. Rosenow (10) in my opinion has demonstrated this clearly and irrefutably. He has further well illustrated the tissue tropism of some of the bacteria concerned in these infections. The hematogenous avenue of infection is undoubtedly the most common one in primary gallbladder lesions. In infections of the bile capillaries it is indubitably the only one, since it seems inconceivable to ascribe even one of these cases to ascending infection.

PATHOGENESIS OF CHOLELITHIASIS.

The infectious origin of cholelithiasis was first advanced in 1886 by Galippe (11). Naunyn (12) later advanced this theory at the Medical Congress at Weisbaden in 1891. Confirmation of this theory was later brought by the researches of Welch (13), Mignot (14), Cushing (15), and Gilbert and Fournier (16). Somewhat startling was the statement of Naunyn that cholesterin was not a specific secretion from the liver, but that it was produced from the bile by infection.

Much discussion is still raging between the adherents of the infectious theory of gallstones and the supporters of the chemical metabolic theory. The partisans of the latter theory seek to explain the formation of calculi on the basis of a hypercholesterinemia. They completely reject the influence of infection in stone formation and insist that an infectious process can cause gallstones only in the presence of a high cholesterin content of bile. Henes (17) asserts that many cases of cholelithiasis show no demonstrable infection, and reports about forty cases of cholelithiasis associated with a high blood cholesterol content and free from any infectious trace. The researches of Aoyama (18) are in this respect highly suggestive. By subcutaneous injection and by oral feeding of cholesterin and some of its esters, he has succeeded in producing gallstones or concretions similar to them in many instances.

Cholesterin or cholesterol ($C_{27}H_{45}OH$) is a complex monatomic alcohol. It forms esters easily with fatty acids. It is insoluble in water. It is present in all animal tissues, especially in the central nervous system. In bile it is held in solution by the bile acid salts and its soaps. The dry corpus callosum contains as much as fourteen per cent., and dried human liver, six to seven per cent. Most gallstones contain as high as ninety-six per cent. Its physiological rôle is as yet very mysterious. It has been assumed that it acts as a protective agent to the red cells, and has been used in the treatment of pernicious anemia, with supposedly good results. While a large number of cases of lithiasis are associated with a high blood content of cholesterol, I feel that it is impossible to establish the pathogenesis of gallstones from this basis. The overwhelming number of these cases is associated with demonstrable infection. Careful study of stones in nearly eighty-five per cent. of cases demonstrated a bacterial nucleus, with evidence of infection in the gallbladder. That a high cholesterol content of the bile is a factor cannot be denied, but it is at best only a predisposing one and therefore of little etiological value. It will be best for us to continue to consider biliary concretions as monuments to one time living bacteria.

THE GALLBLADDER AND BILIARY TRACT AS SOURCES OF CHRONIC FOCAL INFECTIONS.

It is very easy in our consideration of the etiological causes of gallbladder lesions to underestimate the importance of chronic infectious processes in these structures as focal infection factors, capable of multivarious clinical manifestations. Thus we have seen numerous cases of chronic pancreatitis to be wholly dependent upon subinfection, maintained by disease of the gallbladder. Cures have been systematically obtained in this case by cholecystectomy with common duct drainage. Of the more distant effects of chronic gallbladder infection, we wish to mention a type of severe secondary anemia, associated with an increased fragility of the red cells. These cases especially have been encountered in association with common duct stone, although we have had four cases that were associated with chronic cholecystitis only. These anemias which had resisted all dietetic and medicinal treatment quickly yielded to cholecystectomy. I cannot ascribe these results to anything but the ablation of this active focus of infection, which continuously added to the blood toxic products, which acted hemolytically on the red cells. These cases must not be confused with hemolytic icterus; they represent a type of secondary anemia due to increased fragility of the erythrocytes, which is encountered often in all chronic infections.

The primary object of this contribution is specifically restricted to the pathogenesis and physiopathology of these lesions. It is, however, necessary to mention the occurrence of carcinoma of the gallbladder, which often seems to be a terminal event of chronic infection of the gallbladder, due to the long continued irritation, from the presence of stones. For obvious reasons it has been thought best to refrain from treating of neoplasms of the pancreas causing biliary obstruction.

Adhering to the limitations set to this contribution, no reference will be made to the clinical manifestations as bearing on their diagnosis and treatment, with the exception of some brief mention of our opinions in this regard. We hope to illustrate the lessons to be drawn from this contribution in a future publication.

CONCLUSIONS.

1. Diseases of the gallbladder and biliary ducts are principally produced through hematogenous infections. Importance must be accorded in the history to the occurrence of typhoid, tonsillitis, and other focal infections in the past history of the patient. Previous disease of the vermiform appendix must also be taken into account, as well as concomitant incidence of chronic appendicitis.

2. Oddi's researches show that the gallbladder is not a functionless organ, and that the addition of mucus in the bile by the gallbladder is of some importance. In uncomplicated cases of cholelithiasis with the absence of structural lesions of the gallbladder, without active or quiescent infection, cholecystostomy is still sufficient.

3. Caution must, of course, be exercised to avoid leaving in a diseased organ. On the slightest evidence of chronic infection, cholecystectomy must be performed.

4. The rôle of hypercholesterinemia in the etiology of gallstones is regarded as a predisposing factor. We feel that the chief pathogenic rôle is to be ascribed to infection.

5. The rôle of gallbladder infections as chronic foci, capable of setting up systemic metastatic lesions elsewhere in the body, leads us to emphasize the necessity of timely diagnosis and the importance of cholecystectomy as a curative operation.

REFERENCES.

1. Reid, M. R., and Montgomery, J. C.: Acute Cholecystitis in Children as a Complication of Typhoid Fever, *Bulletin Johns Hopkins Hospital,* 1920, xxxi, 7.

2. Hubbard, J. C., and Kimpton, A. R.: Gallstones, A Statistical Study of Cases Occurring at Boston City Hospital, *Annals of Surgery,* 61:535, 1915.

3. Jacobson, Conrad: Gallbladder Disease, A Statistical Study, *Annals of Surgery,* vol. i, September, 1920.

4. Oddi, R.: *Di una speciale disposizione di sfintere allo sbocco del coledoco.* Perugia, 1887, quoted by Luciani, L.: *Human Physiology,* 2:214, 1913.

5. Oddi, R., and Rosciano, R. D.: Sulla existenza di speciale gangli nervosi in prossimita' delle sfintere del coledoco, *Monitore italiano di Zoologia,* Firenze, 1894, v, 216-219.

6. Doyon: *Archives de Phys. norm. et path.,* 1883,1884.

7. Brune: *Arch. des Sciences biologiques de St. Petersburg,* 1889.

8. Mann, F. C.: The Functions of the Gallbladder, An Experimental Study, *New Orleans Medical and Surgical Journal,* 1918, lxxxi, 80-92.

9. Gilbert and Dominici: Angiocholite et cholecystite typhiques experimentales, *Comptes rend Soc. de biol.,* 5-1033, December 23, 18.

10. Rosenow, E. C.: Bacteriology of Cholecystitis and Its Production by Injection of Streptococci, *Journal A. M. A.,* 63:1835, November 31, 1914. Also: The Etiology of Cholecystitis and Gallstones and Their Production by Intravenous Injection of Bacteria, *Journal of Infectious Diseases,* 19:527, 1916.

11. Galippe, V.: Mode du formation du tartre et de calcul salivaire, considerations sur la production des calculs en general, presence des microbes on de leur germes dans ces concretions, *Jour. des Connaisances Med.,* 25 Mars., 1886, *Comp. rend. Soc. des biol.,* Series 8, 3:116, 1886.

12. Naunyn, Bernard: Die Gallensteinkrankheiten, Verhandl. d. Cong. f. inn. Med., 1891; Cf Naunyn, Bernard: A Treatise on Cholelithiasis, *New Sydenham Soc.,* 158, 1896.

13. Welch, W. H.: Additional Note Concerning the Intravenous Innoculation of Bacillus Typhi Abdominalis, *Johns Hopkins Hospital Bulletin,* 2:121, 1891.

14. Mignet (Quoted by Hartman, M. H.): Pathogenese de la lithiase, *Presse méd.,* 3 (2 mars.), 1898. Also: L'origine Microbiene des calculs biliaires, *Arch. gen. de méd.,* 2:129, 1898.

15. Cushing, Harvey: Typhoidal Cholecystitis and Cholelithiasis, *Bulletin Johns Hopkins Hospital,* 9, 91, 1898.

16. Gilbert and Fourniers: Lithiase biliaire experimentale, *Comptes rend Soc. de biol.,* 936 (October 30), 1897.

17. Henes, Edwin, Jr.: The Value of the Determination of the Cholesterin Content of the Blood in the Diagnosis of Cholelithiasis, *Journal A. M. A.,* 63:146, July 11, 1914; *Surgery, Gynecology, and Obstetrics,* 23:91, 1916.

18. Aoyama: Experimenteller Beitrag Zur Frage der Cholelithiasis, *Deutsch. Ztschr. f. Chir.,* 132:234, 1914.

NEWTON CLAYPOOL BUILDING.

TREATMENT OF SALIVARY FISTULÆ BY MASSAGE AND HOT AIR.

By Pierre Kouindjy, M. D.,

Paris, France.

The utility of massage in the treatment of wounds and ulcers had been proved long before the war. Some of my colleagues, Munter, Blach, Lanel, and others, have published their observations on the treatment by massage and hot air of varicose ulcers and other forms of ulcers, which had resisted all other therapeutic measures. In 1905 I reported a case of an obstinate ulcer of the lower extremity cured by massage. The ulcer was situated on the anterointerior surface of the left leg. The patient had syphilis. He had received internal medication and external applications, with no result. Electrotherapy, hydrotherapy, and hygienic measures had no effect on the ulcer. Massage of the tissue surrounding the periphery of the ulcer caused a healing of the entire surface in six weeks by virtue of increasing the resistance of the tissues.

Experience in the war showed that extensive wounds with fistulæ, or badly cicatrized, atonic wounds or suppurating ones, finally cicatrized in a definite fashion due to the massotherapeutic efforts combined with hot air. My confrère and friend, Dr. Cyriax, of London, has recently devised a method of treating war wounds by massage. In a communication published by his pupil, Dr. Louise Bennet, one finds a record of suppurating wounds cured by massage. In one case quoted, where the patient had a large irregular wound of the left thigh twelve cm. in diameter, and another small, suppurating wound of the right thigh, with a temperature of 37.9° C. in the morning and 39° C. in the evening, digital massage and profound pressure of the periphery with movements of both adjoining articulations healed the wounds in a short time.

In my service at the Val-de-Grace I found that massotherapeutic maneuvres combined with hot air gave excellent results in the treatment of vicious cicatrices of the face in war injuries. The results obtained by the use of these two physical agents, as the case would indicate, were really remarkable, even in cases of keloids which would become more supple, less adherent, or even completely detached in some cases. Frequently they would lose their contractility; the muscles and aponeurosis would become detached. This would aid in reestablishing facial symmetry in a greater or less degree. This combination of massage and hot air in the treatment of cicatrices of the face and cicatrices in general prove that, due to the action upon the tissues of the cicatrices and the adjacent tissue, they produced a favorable modification in the circulation and, as a result, in the nutrition of the tissues. I then thought that this method, established by experience, would exert a favorable action upon the lesions of the buccal mucosa in the case of wounds. The following case will serve to illustrate this:

Last year our esteemed confrère, the well known stomatologist, Dr. Roy, director of the dental school of Paris, referred a young patient to me who was suffering from lymphangitis of the right side of the jaw, which followed the injection of a quantity of hydrogen peroxide into the subcutaneous tissue of this region. The jaw was transformed into a huge tumor with an extensive lymphangitis. In the centre of this inflammatory mass was a scarified area about the size of a ten cent piece; in other words, a generalized lymphangitis of the right side of the jaw with considerable infiltration and a scar forming in the centre. The patient was a girl of eighteen. It was decided to use methodical massage and perhaps hot air in the treatment. Superficial and deep rubbings were used as well as manual concentric vibrations and digital centripetal pressure, combined with a current of hot air, followed by an internal application of hot air only. In order to facilitate the resorption of the infiltration it was decided to use the current of hot air by the buccal route and directed on the internal surface of the jaw. We used a simple paper tube to direct the hot air current. In order to avoid any painful sensations from the hot air the mouth was douched with warm water from time to time between applications of the hot air. The lymphangitic pocket diminished in size progressively, and at the end of a dozen treatments the central area was no longer visible, and at the end of fifteen treatments, to the joy of the author of the unfortunate accident and the patient, the symmetry of the patient's face was restored.

This excellent result encouraged me to attempt the method in the treatment of salivary fistulæ which were refractory to all nonsurgical treatment. We soon had an opportunity to try the method in a typical case of salivary fistula, and we present the following case in which the patient was cured by the method of massage and hot air.

Case II.—Sergeant C., of 233d infantry, seen August 29, 1918, in the fifth division of wounded at the Val-de-Grace. There was some impotence of the left shoulder caused by an atrophy of the periarticular muscles of this articulation, and there was a large cicatrix in the cervical region which had been caused by the bursting of a shell. The patient also presented a fracture of the mandible badly consolidated, and a salivary fistula of the left side of the jaw. The patient was injured June 3, 1918. A curettage was done at the region of the fracture of the inferior maxillary bone. This procedure was not sufficient, however, as the wound continued to suppurate. The surgeon then removed a splinter of bone, but the wound continued to suppurate. A month later the patient noticed that saliva escaped through the opening at the base of the wound, especially during mastication. From time to time débris would escape through the opening. When the patient entered the physiotherapeutic service he held a compress in his hand as a protection from the saliva which escaped from the cicatrix. He had been receiving lavage of permanganate of potash several times during the day, injected into the external orifice of the fistula. The nonconsolidated fracture presented a mobile fragment surrounded by an inflammatory area especially in the region of the fistula. There was also an area of congestion of the cicatrix and an infiltration of the jaw.

The general condition of the patient left much to be desired. He was badly nourished, had difficulty in masticating his food, and in addition there was a constriction of the opening of the jaw, the space between the jaws being only eighteen millimetres.

I began to treat the fistula by massage, superficial and deep rubbing, and centripetal vibrations from the periphery to the centre, not touching the fistula. At the same time the facial cicatrix was massaged to make it more supple, less adherent, and less contracted. All of the massotherapeutic maneuvres were executed first without hot air, later by a current of hot air over the entire cutaneous surface of the jaw and the fistula itself. Finally the current of hot air was turned upon the buccal surface through the opening of the mouth in such a way as to bring it in contact with the internal border of the fistula. As the application of hot air occasioned an increase in the amount of heat applied and there was danger of causing a burn, or at least a very painful sensation, it was necessary to interrupt the application frequently and regularly every two or three seconds. The treatments were terminated by regular movements of the mouth.

The treatment began on August 20, 1918, and soon gave encouraging results. On September 26, 1918, an examination revealed the facial cicatrix more supple and less adherent, and the edema of the jaw had diminished perceptibly. The fistula had decreased in size but the saliva still escaped, especially at the time of mastication. The patient was able to eat more easily and masticate better, and he could open his mouth a few extra millimetres. On October 19, 1918, the fistula was closed, no more liquid escaped, mastication was better, the mouth could be opened wider, and the patient was better able to eat. The facial cicatrix was more supple, but still somewhat fibrous. The infiltration of the jaw had disappeared. On December 17, 1918, the fistula was completely obliterated, the infiltration of the jaw definitely gone, the tissues of the cicatrix had a normal appearance, the opening of the mouth was about normal, thirty-three mm., and he masticated his food as though there was no fracture of the inferior maxillary bone. In any case the patient looked very well. Other treatment he had received enabled him to move his shoulder joint and bring his arms to the same level. A simple suture brought the two borders of the fistula together and removed all traces.

How can we explain the action of massage and hot air upon salivary fistulæ? Workers who apply hot air therapeutically state that it causes a hyperemia, which they also call an active hyperemia. This hyperemia causes a local change which may be compared to a caustic action. The hot air produces in addition an analgesic action upon the tissues and a progressive drying of the secretions. This last effect can be compared to a resection of the auriculotemporal nerve. As in this resection, the hot air causes a decrease in the salivary secretion with a resorption of the exudate of the infiltrated regions. During massage the action is mechanical and reflex. The mechanical action exerts a favorable action upon the circulation and the reflex action upon the terminal nerves, and an increase in the nutrition of the tissues. The result of the action of the physical agents utilized, hot air and massage, is an improvement in the arterial, venous, and lymphatic circulation. This gives us a clue to the progressive elimination of the morbid elements of the wounds and of the salivary fistulæ.

Therefore, we are of the opinion that before deciding upon surgical intervention in the treatment of salivary fistulæ it is essential that we first attempt a physiotherapeutic treatment, composed of appropriate massotherapeutic maneuvres, as, for example, superficial and deep rubbings, light pressure, digital vibrations, and a current of hot air applied by way of the mouth to the two surfaces of the jaw, first the cutaneous surface, later the mucous surface. It is necessary to combine the two physical agents so that the hyperemic action of the one is complemented immediately by the mechanical action of the other; so that the vital activities of the patient's tissues are stimulated and the cicatrization of the fistula is completed.

32 RUE D' LIEGE.

GASTRIC ULCER AND CANCER.*

A Case Report of Each.

BY JOHN W. SHUMAN, M.D., F.A.C.P.,
Sioux City, Ia.,
Visiting Physician, St. Vincent Hospital.

The diagnosis of stomach lesions is greatly aided by x ray visualization. The two cases reported below illustrate the diagnostic value of radiology and the shadows show clearly the pathology present.

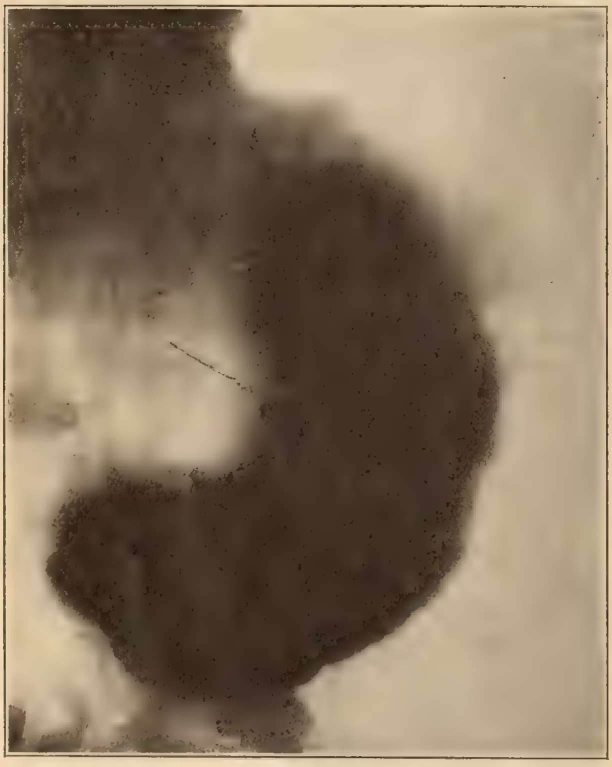


FIG. 1.—(Case I.) Arrow points to deformity on lesser curvature, midway between cardiac and pyloric ends of stomach. Position, prone. Time, two and one half hours after meal was ingested.

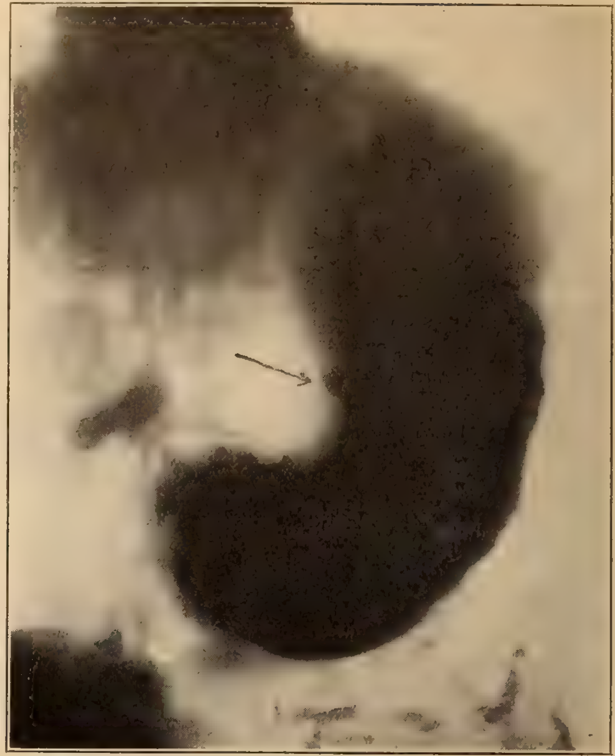


FIG. 2.—(Case I.) Arrow points to the deformity which is still present at four and one half hours.

Both patients were operated upon and the surgical pathological findings confirmed the clinical diagnosis in each instance. The first case was diagnosed clinically as a penetrating ulcer on the lesser curvature, midway between the cardiac and pyloric ends of the stomach. The second case was diagnosed as malignant neoplasm involving the pyloric end of the stomach and causing pyloric obstruction.

PENETRATING ULCER ON THE LESSER CURVATURE, MIDWAY BETWEEN THE CARDIAC AND PYLORIC ENDS OF THE STOMACH.

CASE I.—Mr. P. H., aged seventy, was referred by Dr. W. G. Rowley, of Sioux City, on September 27, 1919. He complained of a burning sensation in the stomach, and gave the history of having had a stomach ulcer diagnosed and cured six years ago by medical treatment. The highly suggestive symptoms of ulcer, i. e., hunger pain, food ease, and hypersecretion, were present. Radiograms of the stomach containing the barium and buttermilk meal at two and a half and four and a half hours in the prone position, showed a constant deformity on the lesser curvature (Fig. 1), which was interpreted as a penetrating ulcer. At eighteen and a half hours the head of the meal was midway through the transverse colon and a "fleck" (crater of the ulcer) was easily observed in about the position where the gastric deformity had been noticed the day previous.

The conclusion was drawn in this case that we were dealing with a penetrating ulcer of the lesser curvature of the stomach; but malignancy had to be considered on account of the age and appearance (malnutrition) of the patient and the history of chronicity. Celiotomy was advised and performed on October 22nd, and a perforating ulcer, "dime

---

*Presented at the Twenty-fifth annual meeting of the Sioux Valley Medical Association, held at Sioux Falls, South Dakota, June 23 and 24, 1920.

FIG. 3.—(Case I.) Arrows point to shadows which were interpreted as "barium flecks." Note that one is more distinct than the others (ulcer crater filled with barium). Position prone. Time, eighteen and one half hours.

size," found situated midway between cardiac and pyloric ends of stomach, on the lesser curvature. This ulcer was cauterized and excised and a posterior gastrostomy performed. On January 15, 1920, Dr. Rowley reported that the man had gained forty pounds in weight and was feeling "the best in years."

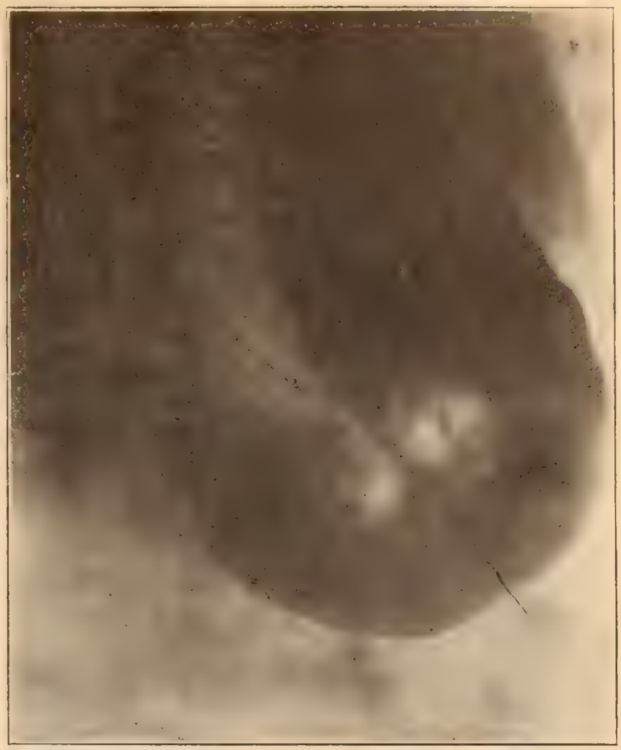


FIG. 5.—(Case II.) Exposure made fifteen minutes after Fig. 4.

MALIGNANT NEOPLASM INVOLVING THE PYLORIC END OF THE STOMACH AND CAUSING PYLORIC OBSTRUCTION.

CASE II.—Mrs. M. E. G., aged seventy-two, was referred by Dr. W. G. Rowley on November 10,

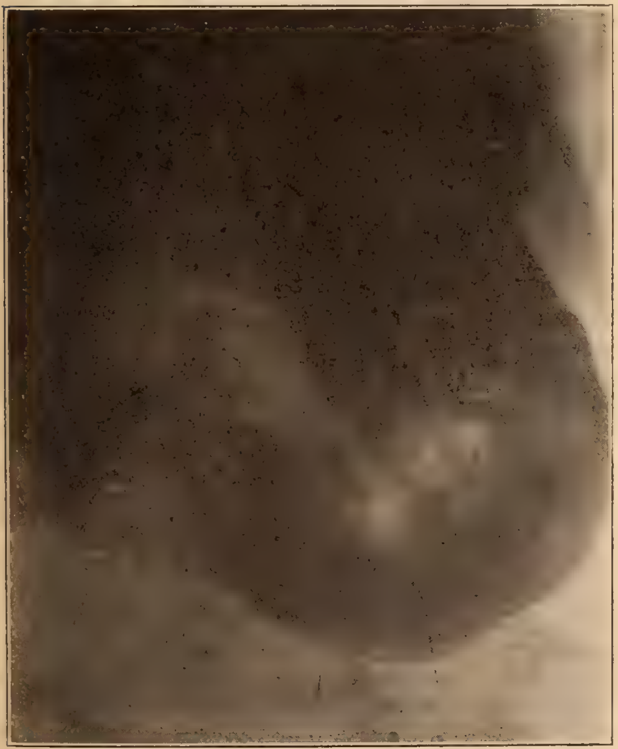


FIG. 4.—(Case II.) Time, immediate; prone position; arrows pointing to filling defect.

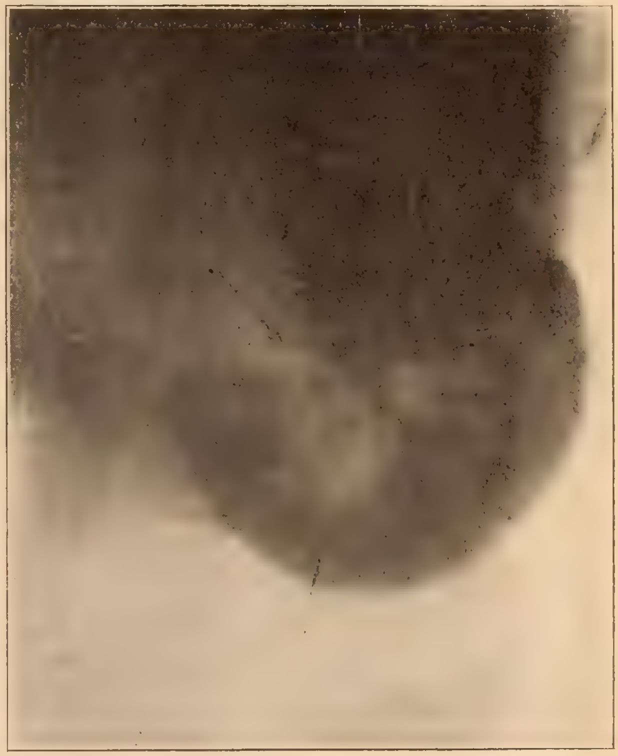


FIG. 6.—(Case II.) Exposure one hour after the taking of the barium meal shows the deformity constant and delayed emptying.

1919. She had lost thirty-five pounds in weight during the past year, and could not retain food. There was a freely movable, smooth, well rounded mass about the size of a small orange palpable in the midepigastrium. Radiograms made immediately, fifteen minutes, one hour, and eighteen hours after taking the barium and buttermilk meal, showed a marked filling defect in the prepyloric portion of the stomach (Fig. 2), which was reported by the surgeon after the operation as a turkey egg sized mass, of cauliflower appearance, found inside the stomach, attached by a pedicle to the wall of the stomach, on the lesser curvature about one and a half inches from the pylorus. No perigastric adhesions and no enlarged glands were found. The neoplasm was removed and a gastroenterostomy performed. This mass had evidently acted in a ball valvelike manner to occlude the pylorus. The patient died six days later. The pathological diagnosis of the tumor by Dr. Rowley was adenocarcinoma. X ray exposures and prints were made by Maud H. Fair, x ray technician.

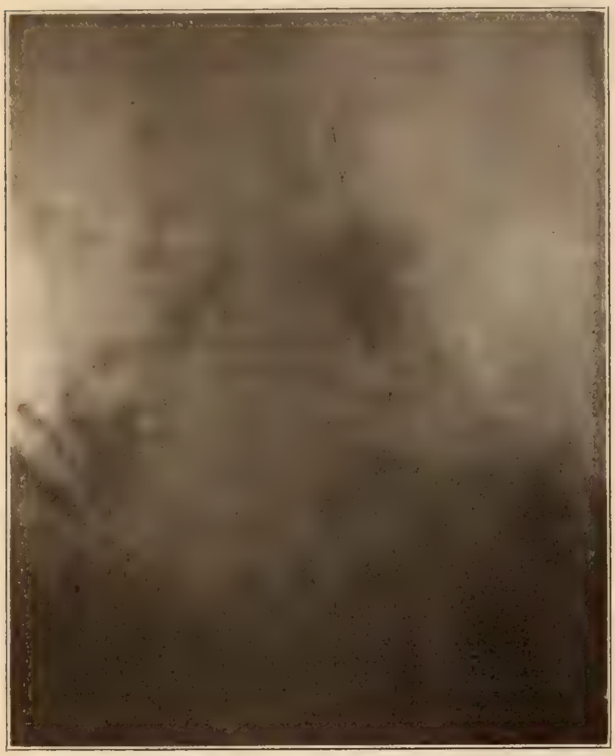


FIG. 7.—(Case II.) At eighteen hours; arrow points to small portion of the barium meal still remaining in the stomach. The constant deformity and delayed emptying made for the diagnosis of a gastric tumor.

FRANCES BUILDING.

Occupational Therapy for the Tuberculous.—F. H. Hunt (*Boston Medical and Surgical Journal,* Sepember 16, 1920) says that occupational therapy's chief aim is psychic and that, based upon its psychic effect, it is applicable in all stages of tuberculosis, early and late, favorable and unfavorable, each case presenting its own problem, and when controlled exercise is added, physical upbuilding with enhanced immunity results.

ACID GASTRITIS.

BY ROBERT HUGH ROSE, M. D.,
New York.

DEFINITION AND DESCRIPTION.

Acid gastritis is an inflammation of the stomach, characterized by an increased secretion of hydrochloric acid and the presence of an abnormal amount of mucus. Mild cases so much resemble simple hyperchlorhydria that it is difficult to draw a sharp line between these conditions. Severe cases so much resemble ulcer that the differential diagnosis is made with difficulty. This overlapping of symptomatology is not strange because increased acidity is present in all three and the symptoms are, to a considerable extent, due to acidity. While, therefore, it is often largely a difference of degree which exists between them, it is important to recognize with which condition one is dealing, in order to prescribe the proper treatment. In severe cases the amount of mucus is so marked that considerable attention must be directed to its removal.

ETIOLOGY.

Acid gastritis is due to the same causes as hyperchlorhydria. It is questionable whether the latter disease can exist for many weeks without producing some inflammation of the stomach and, therefore, turning into acid gastritis. Since my article on hyperchlorhydria (1) gives the causes in detail, I will here mention them only briefly. Acid gastritis is caused by seasonings, spices, acids, coffee, alcohol, tobacco, irregular or rapid eating, overwork, worry, violent emotions, and such surgical conditions as chronic appendicitis, gallstones, and other similar conditions. Infection of more or less severe grade is, according to my opinion, secondary to these causes. Germs from the nose and throat, as well as those taken in the food, are the source of infection.

PATHOLOGY.

The mucous membrane is congested and there is proliferation of secretory glands. When such inflammation is severe, connective tissue may, sooner or later, obliterate some of these glands until the disease is transformed into gastritis with subacidity.

SYMPTOMS.

Appetite.—On account of the acidity, which produces better digestion and often increased motility, the appetite is increased. It is well to bear this point in mind, and, in cases where the appetite is diminished, to look for some complication as explaining the discrepancy. The complication may be spasm of the pylorus (producing impaired gastric motility), atonia gastrica, or a large quantity of mucus.

Taste.—There may be a sour taste and this is what should be found in uncomplicated cases. Inflammation of the bile ducts and of the large and small intestines account for the modification of this symptom.

Heartburn.—A burning sensation in the esophagus or stomach is nearly always present, either regularly within one or two hours after meals, or on occasions when foods which disagree are eaten.

Pain.—The pain which occurs with acid gastritis varies from a slight to a severe one. It is sometimes described as a burning pain because accompanied by heartburn. At times it is sharp enough to assume a knifelike character. Owing to the tendency for circular muscles at the pylorus and cardia to go into spasmodic contractions, there may be attacks of pain of a character comparable to gallstone, kidney stone, or angina pectoris. Lesser degrees of spasm of these muscles produce a sensation of gnawing rather than actual pain. Spasm in the upper esophagus causes a sensation of discomfort which is variously described as a feeling of suffocation, lump in the throat, or choking.

Nausea.—It is natural for patients suffering from this condition to complain of nausea. When spasm of the pylorus causes the acid contents of the stomach to be retained, it may produce nausea with occasional vomiting. In the more severe cases, which are accompanied by a great deal of mucus, vomiting at intervals is Nature's method of removing the mucus when it has accumulated. Thick, tenacious mucus is more common with a subacid gastritis, but it is present in hyperacid gastritis frequently enough to make vomiting of this character an important symptom. It must be remembered that many of these cases are accompanied by mucus in the esophagus, and its presence accounts for some of the substernal discomfort in the upper part of the esophagus.

Examination.—Tenderness in the epigastric region is more marked than it is in hyperchlorhydria, and it is present during the interval between digestion as well as during the periods of digestion.

Test breakfast.—Examination of the gastric contents after the usual test breakfast of bread and water shows not only increased acidity but the presence of mucus as well.

DIAGNOSIS.

There is no difficulty in making a diagnosis of acid gastritis from the examination of the stomach contents. The length of time the disease has existed as elicited in the history together with the severity of the symptoms will indicate whether hyperchlorhydria or acid gastritis is to be expected. Mucus in the gastric contents establishes the presence of inflammation. The amount may not be appreciated at first, because thick mucus does not always come through the tube when the test meal is expressed. It may require several washings of the stomach to remove all the mucus present.

PROGNOSIS.

Although acid gastritis requires more vigorous treatment than hyperchlorhydria, the ultimate prognosis is not as bad as at first might be supposed. The causes, being about the same, are as easily removed. Mild cases respond to treatment almost as quickly as hyperchlorhydria. The more severe cases require great care and persistence in the use of therapeutic measures.

TREATMENT.

Prophylaxis.—This is the same as in hyperchlorhydria.

Active treatment.—The diet is arranged in a similar way to that for hyperchlorhydria. It is necessary to avoid acids, not only vinegar and lemon but all fruits which are in the least degree sour, such as cranberries, gooseberries, sour grapes, cherries, apples, oranges, grapefruit, or berries; pies or dishes of any kind which have a sour flavor. Sour wines cannot be taken. Articles which are oversweetened are also injurious. Mustard, pepper, hot sauces, spices, and foods which are pungent, such as mint, cress, radishes, turnips, onions and garlic are absolutely contraindicated. Excessive amounts of coffee and strong cigars should be avoided. Meals should be simply prepared, avoiding rich dishes and fried foods and using only enough salt to counteract the flat taste. The dietary may be chosen from the following articles:

Fats.—Butter, cream, olive oil, and crisp bacon.

Carbohydrates.—Small amount of sugar, toast, whole wheat and graham bread, corn bread and muffins (made with especial care so as to be light), plain soda crackers, unsweetened whole wheat or graham crackers, baked or well mashed potatoes, baked sweet potatoes, cereals well cooked or dry cereals heated, simply prepared tapioca, lettuce, celery, romaine, spinach, string beans, lima beans, tender peas, butter beets.

Proteins.—Roast beef or lamb, broiled steak, broiled lamb or mutton chops, tender veal, fresh fish, chicken, and turkey. Milk, cream cheese, American, brie, camembert, cheddar, Swiss, McClaren's yellow and unsnappy cheese. Eggs either poached, coddled, scrambled, soft boiled, or boiled for thirty minutes. No pepper, mint sauce, hot seasoning, onion, garlic, and only a moderate amount of salt should be used in the preparation of the proteins.

Drinks.—In addition to milk, which is generally well taken, a moderate amount of weak tea, cocoa (not too sweet), plain water or alkaline waters are harmless. In severe cases a diet as for mild ulcer is necessary.

Drugs.—By the use of a sufficient quantity of alkalies the excessive acidity may at once be neutralized and many of the symptoms, such as sour taste, heartburn, pain and headache, quickly relieved, and the gastric mucous membrane at the same time soothed and its inflammation lessened. For this purpose equal parts of calcined magnesia and sodium bicarbonate may be given in doses of a quarter to a half teaspoon a half hour to an hour after meals, and repeated if necessary two hours later—making in all six times a day. If this dose proves too laxative, a mixture of equal parts of bismuth and soda may be substituted in like amount for each alternate dose of the magnesia and soda. If more laxative is required the amount of the first prescription may be increased, or if the acidity is not very high, powdered rhubarb may be included with a little oil of peppermint to improve the taste.

Mucus.—The presence of mucus is a factor in this inflammatory process which requires especial attention both because it must be eliminated in the cure of the inflammatory process and because it is responsible for much of the discomfort which these patients suffer. Twenty minims of sodium glycerophosphate to the teaspoon of water when administered in a glass of hot water a half hour to an hour before meals dissolves the mucus and washes the stomach. This is an effective measure in that it cleanses the stomach three times daily. In cases accompanied by both a large amount of mucus and obstinate constipation a substitution of Carlsbad, Epsom or Rochelle salts in hot water for the glycerophosphate before breakfast works admirably.

Lavage.—Washing the stomach first with soda and then with a weak solution of silver nitrate if it can be done from three to seven times a week, at a time when the stomach is empty, is more effectual than the glycerophosphate treatment, and the advantage of the use of silver nitrate in this way may be seen in the much more rapid improvement which takes place when it is employed. The stomach is sensitive to silver nitrate and it must be used in a weak solution at the beginning with a gradual increase in strength, never enough to cause the patient pronounced discomfort. A solution of one to twenty thousand is strong enough for the first lavage. This may be gradually increased, but it is seldom necessary to go above one to eight thousand, though some patients who have been accustomed to very highly seasoned foods may stand one to two thousand without discomfort. If it is difficult to use lavage and the silver nitrate is strongly indicated, one eighth to one quarter grain may be taken in a glass of water half an hour before each meal, but it should not be continued for more than three or four weeks.

REFERENCES.

1. Rose, Robert Hugh: Hyperchlorhydria, New York Medical Journal, April 10, 1920.

40 East Forty-first Street.

THE MOUTH FROM A GASTROENTEROLOGICAL VIEWPOINT.

By Louis Henry Levy, M. S., M. D.,
New Haven, Conn.

The gastroenterologist is frequently consulted for some mouth condition or mouth symptom and as a result many unusual things are encountered. The mouth is of interest to the gastroenterologist from three points of view. Affections of the mouth may produce lesions in the stomach, intestines or even of the appendix. Changes in the stomach and intestines may manifest themselves by symptoms in the mouth. Again abnormal conditions within the mouth may produce other abnormal conditions of the mouth. Ordinarily these latter conditions are within the province of that highly specialized division of gastroenterology—stomatology—but since this specialty has not as yet been sufficiently developed it still falls to the gastroenterologist to diagnose and treat mouth lesions with symptoms referable to the mouth.

Conditions arising from within the oral cavity are etiological factors in the production of lesions in other parts of the gastrointestinal tract. The relationship between apical abscesses, pyorrhœa alveolaris and tonsillar infections in the production of some cases of ulcer of the stomach and some forms of appendicitis has been well demonstrated by Rosenow who several years ago proved that the same organisms removed at operation from excised appendices or in the craters of ulcers were present about the various structures in the mouth.

Herschell and Abrahams in their excellent book (1) state that it is probably no exaggeration to assert that the commonest factor which determines whether a given case of atonic constipation will pass into the stage in which it is complicated by colitis is the condition of the mouth. Quite apart from the efficiency of the teeth as a masticating machine, the presence of centres of pus infection from which millions of virulent organisms are swallowed with each mouthful of food must be a constant menace to the integrity of the function of the gastrointestinal tract.

Colyer (2) states that the food imperfectly masticated and incorporated with infected saliva sooner or later starts a catarrhal inflammation. Septic gastritis may result. The septic material from the stomach will find its way into the bowel and produce either constipation or diarrhea, and in some cases mucous colitis. The acidity of the stomach is not an absolute antiseptic to the organisms swallowed and some of the cases of phlegmonous gastritis occasionally reported are examples of bacteria attacking the gastric mucosa in the presence of a normal gastric acidity. The acid may to some extent inhibit but not necessarily destroy bacteria. Chronic gastritis in many cases is undoubtedly due to the constant irritating action of bacteria swallowed in the saliva and with the food. The source of the bacteria is the teeth. Such a condition may persist for years, often resulting in ulcer and only disappearing with proper treatment of the teeth. Two cases from my records will illustrate this.

Case I.—Miss R. F., aged twenty-eight, stenographer, with gastric symptoms of eleven years' duration. The symptoms consisted of sour taste, bad breath, occasional nausea, epigastric distress after meals, lack of appetite, costiveness and nervousness. She had been operated upon twelve years previously and the appendix removed. The symptoms at that time were similar to those of which she now complained, operation having failed to relieve them. Examination showed an undernourished young woman with marked epigastric tenderness and with tenderness along the ascending colon. She had very marked pyorrhœa alveolaris, pus being readily expressed in goodly amounts from the gum margins. Treatment with proper diet and medication resulted in slight amelioration of the symptoms. She had been advised to consult a dentist, which she at first failed to do. This was insisted upon and with careful prophylaxis of the teeth and gums and with the extraction of some teeth her symptoms disappeared. She has had no recurrence of symptoms in a year and even her weight has increased, from ninety-eight to 113 pounds.

Case II.—Mrs. R. K., forty-five years of age, houseworker, complained of epigastric distress and pain for six years. The pain had recently become almost constant and was aggravated by eating sweet foods. The pain had occurred at night. There was considerable belching, but no sour taste; no nausea or vomiting. The bowels were costive. She had had an appendectomy and ovariectomy eighteen years before. Examination showed a faint systolic murmur at the aorta. There was severe tenderness in the epigastric region near the ensiform. The tenderness extended for a slight distance to the right. Fluoroscopic examination showed dilatation of the left auricle.

Treatment, consisting of regulated diet and medication, offered some relief, but not marked. Further questioning elicited the information that she had had occasional trouble with her teeth. They appeared to be in good condition, and an x ray was advised. A large apical abscess was found, the affected tooth extracted, and the diet and medication continued. The symptoms gradually disappeared and have not recurred in a year.

As Rosenow has pointed out, ulcer of the stomach may also be caused in some cases by bacteria from infections about the teeth. These ulcer cases are the direct sequence of chronic gastritis, which has resulted from foci in the mouth. I have in mind one such case that I saw. A woman aged thirty-eight with typical ulcer symptoms of fifteen years' standing and especially severe epigastric pain after eating, consulted me about her condition. Medication and diet only gave occasional relief. Although her teeth were flawless a concurrent attack of neuritis of the arm aroused suspicion of the possibility of an apical abscess. The x ray revealed the presence of five apical abscesses. These were treated and not only did the neuritis disappear but the symptoms of gastric distress also.

Aside from the countless cases of acute and chronic gastritis resulting from rapid or incomplete chewing or chewing with poor teeth, there is a group who might be properly classified as gum chewers. These chew with the bare toothless gums or with one plate and one toothless gum. Those with the one plate I have found to be women whose only reason for using the one plate, which was an upper plate, was for cosmetic reasons. It prevented the appearance of sunken in jaws. These patients had even more difficulty in chewing than did those who used the toothless edges of both maxillæ. The improper mastication, especially of the coarser or more fibrous foods and incomplete dextrinization of carbohydrates by means of the saliva, tend to force food into the stomach in a condition which does not allow the gastric juice to act properly. The result is delay in gastric digestion, overactivity of the gastric glands, hypermotility and delay in the emptying of the stomach contents. Here are present all the factors for the production of an inflamed mucosa. The condition being uncorrected, there follows in due course ulceration and even later carcinoma.

Two patients of mine, both women, one sixty-six years old and the other fifty-eight, had for years been chewing with upper plates and toothless lower jaws. For years their symptoms were suggestive of a disordered gastric condition. The cause of their gastric condition was apparent and they were advised to have lower plates made, which they did. With better mastication of their food and correction in diet for the gastric condition they were soon in a better state than they had been for years.

With the other class of gum chewers—those without any teeth—who have for years been chewing with their naked gums, I have record of a woman of sixty-eight years of age who for twenty years had been having gastric symptoms. There is another case of a man of fifty-five years of age who for four years had been having attacks of symptoms pointing to gallbladder disease. Another patient whose attacks of epigastric pain were excruciating had an area of severe tenderness and resistance in the epigastrium that covered a space of about two inches. An x ray series showed a chronic pyloric ulcer with some obstruction. His condition was a surgical one, but he refused operation. He said that he would never put store teeth in his mouth. After three years, although he is seventy-one years old, he still suffers from his severe pains and the only relief obtainable is through morphine.

Case III.—Still another case was that of a man aged eighty years with a gastric history indefinite for about six years but more definite for the six months before I saw him. He had been gum chewing for over ten years. His history and a hard mass to the right of the epigastrium was suggestive of carcinoma and this diagnosis was verified by the x ray. He died before any surgical relief could be attempted.

Symptoms within the mouth suggestive of or pointing to conditions in other parts of the gastrointestinal tract are well known. We have come to associate the bad, foul taste and furred tongue with a diminished gastric acidity or with constipation. We know also that the sour taste and the burning in the mouth when it does occur is a manifestation of the hyperacid stomach. Cannon (3) states that during sleep there is a regurgitation of gastric contents into the esophagus and often into the mouth in small quantities. As a result with the hypoacid stomach there is the furred, thick tongue and with the hyperacid stomach the clean, red and moist tongue. I have seen patients who have told me that they were awakened during the night or aroused in the morning by a rush of very sour fluid from the stomach into the mouth. One patient, a woman aged thirty-eight, complained that she was often awakened during the early morning hours by a sudden desire to vomit and she would eject as much as a pint and a half of very acid fluid that would not only burn her esophagus and mouth but would make her teeth feel puckery. Examination of the fluid showed a free acid content of sixty-eight.

Another mouth symptom, one not generally known and yet indicative of a gastric condition, is salivation without local cause. This symptom is sometimes present in carcinoma of the stomach. The exact mechanism of the symptom is unknown. In patients with a definite gastric history suggestive of carcinoma this symptom is of the utmost importance in the diagnosis. I have a record of two cases, one a man aged forty-eight with gastric symptoms of only one month's duration. The salivation was persistent. X ray plates and operation revealed an inoperable carcinoma of the stomach. The other patient was a man sixty-five years old and his also was a history of short duration, not over two months. X ray examination showed a pyloric obstruction. He died after exhibiting all the symptoms of a malignant growth.

The third group of conditions are not as commonly seen by the gastroenterologist as are the affections of other parts of the gastrointestinal tract. The mouth is a common site for the dentist, the laryngologist, often the dermatologist, often the general practitioner and less often the gastroenterologist. Frequently a patient with a mouth lesion will travel from one to another of all of these specialists. Some conditions of the oral cavity stand out from the rest and it is these that concern the gastroenterologist.

Perhaps one of the commonest mouth complaints is the canker sore. These may be present on the tongue, the sides of the mouth, the gums, the floor and the roof. Differentiation as to etiology is of vast importance in the treatment. I have seen some that were frank cases of Vincent's angina and the organism could be isolated from the sore. Perhaps the most characteristic feature about these was the odor and the tendency to spread. Another group of cases were those with a herpes of the mouth. These patients gave a history of nervousness, of canker sores occurring at intervals for years and of the intense pain of the sores which seemed to defy treatment.

The commonest cases of canker sores are those resulting from the action of ulcerated infected teeth on the mucosa or from an acid condition of the mouth which may be associated with a hyperacid condition of the stomach. As a result of this acid condition of the mouth, there is produced by the action of bacteria on retained food particles between the teeth and in cavities, products of decomposition which are irritative. After the formation of the sores, the acid of the mouth also irritates.

Salivation without any other symptom is an occasional symptom and careful examination will reveal the presence of either rough or jagged teeth situated in the vicinity of the openings in the mouth of the ducts from the salivary glands. This condition is readily corrected by the proper treatment of the teeth. Occasionally the salivation will persist for a time after the teeth have been treated. When such is the case suitable doses of either belladonna or atropine will check the salivation.

One case of salivation was of considerable interest. The patient, a woman fifty-four years old, had been suffering for one year from excessive salivation following the eating of spicy or vinegary foods. Alcoholic drinks would also excite the flow of saliva. There was often mouthfuls of saliva excreted. Even the drinking of cider with a low alcoholic content would stimulate this excessive flow. Any of these stimulating substances would give her a sensation as if her neck and the floor of her mouth were swollen. The glands here would swell and remain swollen for as long as twelve hours. There would also at the same time be a swelling of the parotid glands and her cheeks would feel full and her face puffed. The condition was undoubtedly one of a vasomotor disturbance in a patient of a neurotic type.

Disordered tastes in the mouth are also frequently complained of. A commonly encountered patient is the one with the bad taste. Here, too, a knowledge of the exact cause is of considerable aid in the treatment. Aside from the mouth breather with the perpetual bad taste in the morning, there must be considered the hypoacid stomach with the furred tongue. Bad teeth and pyorrhea must be looked into and also a less common cause, submucous abscesses with a starting point under some cap. There must also be thought of the collection of food debris in the large crypts of some tonsils. These are present in small balllike masses and when they are expressed from the crypts the bad taste disappears.

Another frequent complaint is the brassy taste. Examination of the mouth in these cases will reveal the presence in or on the teeth of two different metals. They may be a gold cap and a silver, copper or zinc filling. When two different metals are present in the mouth and there is an acid condition of the saliva, there is formed spontaneously a minute electric cell. An electric current is set up. Electrolytic action on the metals occurs with the solution of enough of one of the metals to give the brassy taste. Neutralization of the acid in the mouth usually causes a disappearance of the brassy taste.

Two cases that were baffling not only to me but to others and the diagnoses of which were only made in one case three months prior to death and in the other one month prior to death were in the first case pemphigus and in the second case pernicious anemia. In the case of pemphigus, the first lesions were in the roof of the mouth under an old plate and were attributed to irritation from the plate. The sores resisted all treatment and gradually spread until the lips became involved and later the face. When the face was attacked the nature of the condition was quite clear.

In the second case there was a history of a burning sensation of the tongue and gums at intervals for over a year. The attacks usually lasted two weeks. The first time I saw the patient he had, besides the symptoms first mentioned, burning in the epigastrium. There was marked congestion of the tongue and lips. Three months after this when I saw him again, he complained of a sore in his mouth that persisted for a month. On another visit three months after the last visit, there were other sores in the mouth, and he also complained of heartburn and diarrhea. Shortly after this the sores began to increase rapidly and there was severe pain on swallowing due to other sores on the walls of the pharynx. His condition became poorly and in the course of examination a blood count was made and the hemoglobin determined. The result showed the presence of pernicious anemia. The patient died shortly afterwards.

There are many other conditions of the mouth of interest to the gastroenterologist. No attempt has been made to touch on the luetic, the tuberculous or the carcinomatous lesions. The purpose of this paper has been simply to tell of some of the interesting conditions centering about the mouth which are frequently encountered by a gastroenterologist.

RFFERENCES.

1. Herschell and Abrahams: *Mucous Colitis.*
2. Colyer: *Dental Disease in Relation to General Medicine.*
3. Cannon: *The Mechanical Factors of Digestion.*

1172 Chapel Street.

SOME UPPER ABDOMINAL TRUTHS AND FALLACIES.*

By Moses Behrend, M. D.,
Philadelphia.

It was my good fortune to have been a general practitioner for fifteen years and during half of this period to have been a socalled internist. Having had the opportunity of performing operations in my surgical cases it was often possible for me to compare the results of medical and surgical treatment. This preliminary training was undoubtedly an important factor in aiding at the arrival of conclusions in making diagnoses. It is not only important in the preliminary understanding of the case but also in postoperative complications, when one's training in physical diagnosis assists in the treatment of the case. The diagnostic ability of the physician is in all probability taxed to a greater degree in upper abdominal conditions than in those below the umbilicus.

The main point at issue between the internist and the surgeon is the curability of ulcers of the stomach, as well as the advocacy of the cure of gallbladder conditions by a method to be discussed later in detail. From my own early experience I can truthfully say that I do not recall a single case in which I was reasonably certain that a cure had been effected. The internist cannot prove that he has cured his patient, even if the radiologist reports the ulcer to have healed. The symptoms ot indigestion will still remain and it will be finally the surgeon's duty to operate. While I would not oppose the treatment of ulcers of the stomach or duodenum in their inception, still I believe that in a symptomatic condition lasting over a prolonged period of time surgery is the proper course to pursue. That period of time may vary, depending on the individual and also upon the symptoms. Medical treatment without relief should not be extended over a few weeks. There must not be a time limit, so to speak, for those who have been chronic sufferers from indigestion for many years. Here the internist does positive harm by attempting to cure a socalled healed ulcer, perhaps a cancer in its early stages, or a fulminating type of cancer in which the symptoms reach their height in a few weeks. There is just as much chance for an internist to cure a callous ulcer as there is for an obstetrician to determine the sex of the child *in utero*. These ulcers usually found in the stomach are dense and nonresistant. They feel like a scirrhus of the breast. The ulcers are often in a mass of adhesions and at times it is impossible macroscopically to distinguish them from carcinoma of the stomach. The tendency of ulcers to undergo a malignant change is another argument why these cases should have a timely operation. This is a timeworn admonition, but there are still many who disregard the warning and continue to treat these cases until surgery can do no good.

In duodenal ulcers there is not so great a tendency to undergo cancerous degeneration, but the danger of hemorrhage and perforation of this type is great. Very few adhesions surround duodenal ulcers, which accounts for the fact that when a duodenal ulcer perforates there is a free flow of intestinal contents into the abdominal cavity. The gastric ulcer may also bleed and perforate. In these there may be a perforation without much leakage on account of a barrier of adhesions being thrown quickly around the opening, preventing serious contamination of the abdominal cavity. The readiness of gastric and duodenal ulcers to bleed and perforate should put these cases in the surgical class without subjecting them to prolonged medical treatment.

Speaking of hemorrhage recalls the history of a boy, about sixteen years of age, who was admitted to the hospital, suffering from hematemesis. On account of a previous history of hemorrhage we considered it advisable to operate on him. Preparations were accordingly made for the following day, but during the night a concealed hemorrhage developed and he died before morning.

What, then, is the proportion of cases which the surgeon cures, compared with those cured by the internist? Medical cures are few, while the surgeon who is able to excise these ulcers, preferably by means of the cautery, has a large percentage of cures. There is no question that excision of the ulcer bearing area and a properly placed gastroenterostomy give the best results. A gastroenterostomy is not essential in every case. It depends upon the situation of the ulcer and the judgment of the operator as to whether the incision has encroached too far on the lumen of the stomach. There is no question that the patient is cured of an ulcer that has been excised, but this does not prevent a recurrence of ulcers. These may be at a different site in the stomach or at the gastrojejunal opening. A recurrence at the latter position is due to the same process that caused the original duodenal ulcer and not to the use of nonabsorbable suture material. This technical question, however, need not be discussed fully here. Suffice it to say that in all the gastroenterostomies which I have performed or reopened, the nonabsorbable suture was not the cause of marginal ulcers.

The fact that patients return to the internist after operation does not mean that the particular operation has failed. Contributing factors are indiscretion in diet, improper postoperative treatment, and inability or refusal of the patient to put himself in the hands of the internist so that his future course may be guided by him for at least a year. This probably is the most important part in the final cure of ulcer patients following operation.

The recent work of Lyon on the biliary secretions may be important from a diagnostic viewpoint, but it has led to numerous fallacies. It is a diagnostic aid determining solely by the character and appearance of the bile which portion of the biliary tract is diseased. This is done by means of a duodenal tube. I have tried the test in cases of chronic jaundice, but did not meet with any success. The reason was evident at the operation, when the following diseased conditions were found: In one case there was a stricture of the right and left hepatic ducts; in another, there was a new growth in the head of the pancreas; in a third, there was a stone tightly impacted in the papilla of Vater, and so on. It is apparent, therefore, that even from the viewpoint of diagnosis the test is not necessary, but it does complete the study of these cases.

---

*Read before the Association of Ex-Resident and Resident Physicians of the Mt. Sinai Hospital, November 3, 1920.

In regard to chronic jaundice it is unfortunate that many physicians consider that the longer the jaundice exists the less danger will there be of hemorrhage following operation. The trouble in the past has been that the waiting period before operation has been extended entirely too long. It is difficult to give any hard and fast rules to follow, but I believe two to four weeks' observation and study are sufficient. The urgency of the symptoms, such as the presence of Charcot's fever, intense itching, and other constitutional symptoms, ought to make some impression on the internist. The danger in waiting is due to the degeneration of the organs, the heart especially, the liver itself, the spleen, and the sympathetic system. Prolonged complete obstruction will have the same effect on the liver as a stone will have on the kidney, namely, the liver will practically cease to functionate. It has been my experience that if, upon opening the common duct, watery bile exudes, a guarded prognosis must be given. The following case will be of interest:

Case I.—A woman, aged sixty-two, with a history of a cholecystectomy having been performed a few years ago. A second operation was performed by me two and a half years ago for chronic pancreatitis. At that time her common duct was drained with a T tube for eight months. The patient remained well following the last operation until two weeks ago, when she became intensely jaundiced, followed by chills, fever, and sweat. To guard against any possibility of bleeding we gave the woman a veneclysis of two per cent. calcium lactate solution the day before operation and immediately following operation. There seemed to be a greater tendency of the blood to coagulate following this treatment. It must be borne in mind, however, that all measures used to prevent hemorrhage in these cases may be fruitless. The head of the pancreas in this case was of stony hardness, carcinoma being suspected. The common duct was greatly dilated and resembled a coil of intestine. It contained about four ounces of bile. An anastomosis was made between the common duct and the stomach. The first twenty-four hours the patient vomited large quantities of bile, after which the vomiting ceased following gastric lavages. On the second day her color had changed from deep yellow to pale yellow. The patient made a good recovery.

In contrast to this case let me cite the following, which shows the inadvisability of waiting too long.

Case II.—A woman, about forty-five years of age, was operated on for chronic jaundice, the duration of which was several months. Her myocardium was already affected and her kidneys were not normal. In this case a stone was found tightly imbedded at the papilla of Vater, necessitating a choledochoduodenotomy. The patient did well for forty-eight hours, when the myocardium gave way and she succumbed to the deleterious effects of long continued jaundice. There was no secondary hemorrhage in this case.

It would be a mistake, in a paper of this character, not to present for your consideration cases in which it was difficult to make a diagnosis. A case of great interest was that of a young man on whom we had operated two years ago for acute appendicitis. Four days before admission he complained of upper abdominal pain coming on suddenly. Examination revealed a rigid abdomen, the patient's expression was anxious, but a rather odd feature was that vomiting was not an important symptom. A diagnosis of ruptured duodenal or gastric ulcer was made. At operation there was found comparatively little of the contents of the duodenum in the peritoneal cavity. The perforated ulcer was excised with the cautery. A gastroenterostomy which had been our custom in the past was not made. The abdomen was washed with quarts of salt solution. This patient made a good recovery.

The brother of a Philadelphia physician was taken suddenly ill about 7 a. m. He immediately went to his office, where on examination was found a universally rigid abdomen. He had vomited and felt nauseated. His skin was cold, his face pale, and he seemed to be in a state of shock. There was a previous history of indigestion. I confirmed all the subjective and objective symptoms and made a diagnosis of a ruptured gastric or duodenal ulcer. At operation no perforation was found, but instead a subacute appendicitis.

A woman about forty-five had been under the care of a competent general practitioner for some time, who had observed her in several attacks which he thought was appendicitis. The pain was always in the right iliac fossa until the last attack, when the pain occurred higher up and also radiated to the left side of the abdomen. The physician then became suspicious of gallstones, which diagnosis was confirmed with the coexistence of chronic appendicitis. At operation the pathology was found as diagnosed, but in addition an abscess of the pancreas was revealed. This was opened and drained. The pain on the left side can be accounted for by the abscess of the pancreas.

In conclusion, it must be evident to you all that the closest cooperation must exist between the internist and the surgeon. While the internist should treat gastric and duodenal ulcers in their inception, considerable harm has been done by the watchful waiting policy. It is impossible to cure the hard, callous ulcer without operation. The internist cannot prove he has cured his ulcer patient, while a thorough operation will. After operation, patients must be impressed concerning the necessity of placing themselves in the hands of a competent physician for at least a year. It is a fallacy that the longer jaundice is present the less likelihood will there be of a secondary hemorrhage following operation.

The sooner operation is performed in cases of chronic jaundice, the better will be the prognosis. The method advocated by Lyon completes the study of the case and assists in the diagnosis, but cannot be considered useful as a curative measure.

1427 North Broad Street.

CRYPTITIS AND HYPERTROPHIED PAPILLÆ AS CAUSES OF PRURITUS ANI.*

By J. F. Saphir, M. D.,
New York,
Visiting Surgeon, Diseases of the Rectum and Anus, People's Hospital; Assistant Surgeon, Rectal Department, Out Patient Department, Gouverneur Hospital; Chief of Clinic, Rectal Department, Stuyvesant Polyclinic, Etc.

At the junction of the lower portion of the rectum with the anal canal is a distinct line of demarcation known as the white line of Hilton, also known as the mucocutaneous junction. Here are situated the anal papillæ and the crypts of Morgagni. These papillæ, from three to twelve in number, look like small tits, or small saw toothlike triangular projections. Concealed behind these papillæ are the openings of the crypts of Morgagni, or anal pockets. Some of these are merely slight depressions, and others form distinct sinuses. This area, known as the anorectal line, linea dentata, or the white line of Hilton, is of especial interest because it is the seat of inflammatory conditions which present symptoms out of all proportion to the lesion affecting them.

Hypertrophied papillæ and cryptitis are the most frequently overlooked causes of pruritis ani. You will often find patients who have undergone an operation for hemorrhoids, which had been diagnosed as the cause of the pruritus, still suffering from itching as severe as before the operation. These patients as a rule have been and still are victims of cryptitis. On using a bent probe, the inflamed crypts can be located running into and underneath the puffed up skin tags, and can be located in the same manner as when searching for a blind internal fistula.

Those patients who have had external and internal hemorrhoids removed at the same time, have their crypts removed with the external hemorrhoids and are cured of the pruritus. We take for granted that the pruritus these patients have been suffering from was due to no other cause than cryptitis, which was masked by the fact that the patient was a sufferer from internal and external hemorrhoids, and the severe itching was attributed to them rather than to the real cause.

These crypts act the same as blind internal fistulæ, and most of these fistulæ have their original focal points of infection in the crypts of Morgagni. These crypts often get clogged up, and an inflammatory process follows, resulting in the formation of an abscess, which gives the usual symptoms of a perianal or a perirectal abscess, and these often extend and produce large perianal, perirectal, or ischiorectal abscesses. The crypts of Morgagni, when inflamed or infected, cause a discharge of various types of bacteria, depending upon the type or types causing the infection, and the continued irritation caused by the discharge produces first itching or pruritus, then the condition becomes aggravated by scratching. Patients suffering from cryptitis will invariably complain of itching especially intense after defecation, due to the secretion or discharge being expressed from the crypts by the expulsion of the fecal mass and spread about the anus.

The hypertrophied papillæ are the most frequent cause for the socalled neuralgia of the rectum, produced by the contraction of the sphincter muscle upon the hypertrophied papillæ, and the pressure produced upon the nerve endings of the papillæ transfers and transmits the pain.

Frequently small masses of fecal matter or foreign bodies are arrested or become lodged in these pockets and produce local and reflex irritation. The crypts become clogged, and the decomposition of the fecal matter or retained secretion causes irritation, followed by inflammation called cryptitis, which frequently goes on to pus formation. The accumulated discharge overflows from the crypt, causing moisture, irritation, excoriation, and itching of the anus.

Frequently patients complain of a prickling pain, or of an uncomfortable feeling immediately after stool. Others complained of this pain at no other time than immediately after stool, probably caused by some of the hypertrophied papillæ being caught in the grasp of the sphincter muscle, and the itching produced by the expression of the discharge from the crypts during defacation.

The hypertrophied papillæ, when caught in the grasp of the sphincter muscle, cause as severe pain as that produced by anal fissure, which is caused by hard stool getting caught in one of these semilunar valves, and this is torn more and more at each succeeding fecal movement, until a raw ulcerated surface is produced, which is stopped only at the mucocutaneous junction.

Inflammation of the papillæ and hypertrophied papillæ are frequently associated with cryptitis, and where a cryptitis exists the hypertrophied papillæ act as dams, preventing the discharge from the crypts, and resulting in abscess formation. Treatment consists in removing the papillæ, when hypertrophied, under local anesthesia, and in opening and cauterizing the crypts when inflamed or infected. Inject a one fifth or one sixth per cent. solution of quinine and urea hydrochloride into the base of these hypertrophied papillæ and snip the papillæ off as close to the base as possible. By everting the anus, you may bring the papillæ into view, or, if necessary, use a fenestrated rectal speculum for the purpose. It is never necessary to use a general anesthetic. Bleeding is a negligible quantity, and the after treatment consists of local applications of silver nitrate, ten per cent., or ichthyol in glycerin, ten per cent., or balsam of Peru every other day until the parts are healed, usually two to four weeks.

For cryptitis inject the parts of area about the crypt, including the hypertrophied papillæ, and excise the crypt and the papilla in a V shaped incision, cauterize the base of the crypt with silver nitrate, ten per cent., and treat as above. With a bent probe one may locate the crypts, and frequently topical applications of pure ichthyol by means of the probe dipped into the ichthyol and passed to the bottom of the crypt, may clear up an ulcerated and inflamed crypt.

Case I.—H. S., fifty-six years old, referred to me by Dr. A. J. Zobel, of San Francisco, gave a history of constipation for the past fifteen years, otherwise no trouble until six months ago, when he noticed itching in and about the anus and a soreness on the left cheek of the buttock near the anus. This itching would at times spread anteriorly to the scrotum. He had received treatment at the hands of a few physicians and by means of salves and suppositories got slight temporary relief, but the itching still persisted and unconsciously he scratched the parts, so much so that the parts grew sore from the scratching. Examination revealed the parts reddened, skin cracked, moisture and redness over the anus and anteriorly involving the scrotum; no protrusions, no induration except a thickening of the skin, giving it a leathery feel; some scratch marks, and a puffiness of the skin which ordinarily would be pronounced skin tags or external hemorrhoids. On everting the anus, especially over the puffed up skin, and having the patient strain down, I could notice small papillæ behind which were inflamed crypts. These became very distinct and, on inserting a bent probe, the tip of the probe could be felt moving with freedom underneath the skin on manipulation of the probe. This actually can be considered a blind internal fistula. Under local anesthesia of quinine and urea hydrochloride, one fourth per cent., I slit the tract open, the same as I would in a blind internal fistula, trimmed the edges to prevent interference with proper drainage, cauterized the base with ten per cent. silver nitrate, inserted a small drain; the man went about his business and called for his local aftertreatment every other day for the first week, and then once a week after that; and after twelve treatments was cured. He is well today.

---

*Presented at a meeting of the Clinical Society of the Out Patient Department, Gouverneur Hospital, November 4, 1920.

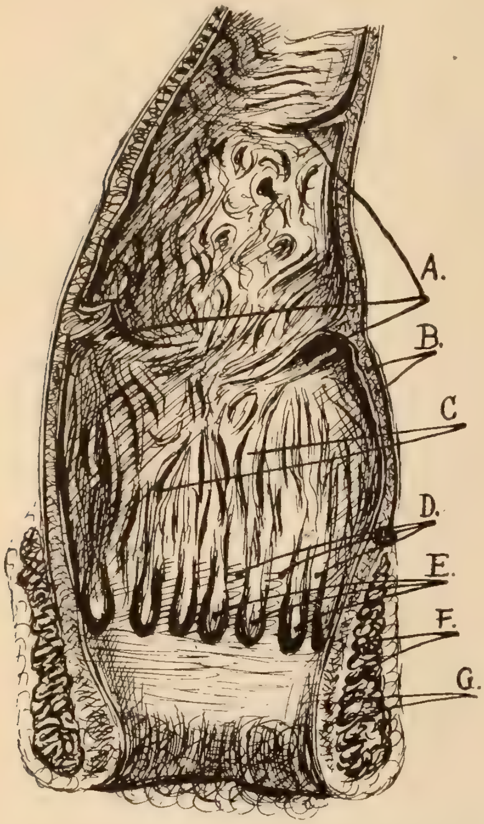


FIG. 1.—A, Houston's valves; B, longitudinal muscular coat; C, rectal ampulla; D, columns of Morgagni; E, crypts of Morgagni; F, external sphincter; G, Internal sphincter.

CASE II.—C. J., forty-nine years old, referred to me by Dr. M. Lewson, clothing salesman by occupation, felt well until eight months ago, when he began to notice itching, especially severe at night; he also had itching during the day which was so intense that it interfered with his business. In the midst of a conversation with a customer, his hand would automatically or reflexly go to his buttocks or anus, which he was compelled to pat or touch because he was ashamed to scratch, and, as he described it, "the more you touch or pat the part, the more it itches." He got so that he was ashamed to wait on a customer. He received treatment at the hands of a few physicians by means of salves and suppositories, and was treated for eczema by one or two doctors, but without relief. He had no protrusions, had no swelling or abscess at any time, his bowels moved regularly, had never noticed any blood or mucus with his stool, but he complained very much of itching after a bowel movement; the parts were very wet, and the moisture from the anus went down to the scrotum, causing also itching of the scrotum. His chief complaint was moisture and itching, especially severe at night and immediately after stool. Examination revealed a condition almost the same as above, a cryptitis.

Under local anesthesia of quinine and urea hydrochloride, one fourth per cent., the crypts were slit open, the edges trimmed to insure proper drainage, the base of the crypts cauterized with ten per cent. silver nitrate, a small drain inserted, a gauze dressing and a T binder applied, and the patient went home to return every other day for treatment. He obtained immediate relief from itching, and was able to attend to business without the fear of the necessity to scratch preying upon his mind.

CASE III.—A. R., twenty-eight years old, operator, gave a history of having had protrusions and much itching for the past two years; went to a doctor who treated him for piles with salves and suppositories, without relief. He could not sleep at night on account of the itching, and this itching became more intense after inserting the suppositories. Three months ago he was operated upon at the Post-Graduate Hospital, was in the hospital for a week, but had had no relief from the itching; in fact, he asserted that the itching had become more intense since the operation. He could not sleep on account of the itching, which awakened him three or four times during the night. He had no blood or pus, no pain or protrusions. He had occasionally made the parts bleed from the vigorous scratching, consciously or unconsciously. Examination revealed very red, inflamed, and angry looking buttocks and anus, the redness and inflammation reaching anteriorly to the scrotum and involving the dorsum of the penis, and posteriorly over the skin, reaching a line parallel with the tip of the coccyx. The skin was scaly and thickened, covered with scratch marks, some puffiness of the skin about the margin of the anus (skin tags), which, on being everted, exposed to view a number of hypertrophied papillæ, behind which were large openings of inflamed crypts, from which was noted a mucoid secretion. A diagnosis of cryptitis was made, and under local anesthesia, as described above, I slit open four inflamed crypts, removed the hypertrophied papillæ, cauterized the bases of the crypts, applied the gauze dressing and T binder, sent the patient home, and for the first time in thirteen months that patient slept through the night. He has been relieved of itching and the inflamed condition of the parts, and is attending to business.

Case IV.—S. R., fifty-seven years of age, manufacturer, referred to me by Dr. Arnold Sturmdorf, gave a history of having felt well until nine months ago, when he noted itching of the anus. He sought relief at the hands of a number of doctors, without success. He was sent to a prominent skin specialist who said he had eczema; he was treated for that condition but without relief. He still had the severe itching, more severe during the day and when walking, and recently this itching had begun to disturb his nights. He had also noted moisture and wetness of the parts; no blood, no pus, no pain, nor mucus. Examination revealed four distinct inflamed crypts, which I slit open under a general anesthetic, kept him in the hospital three days, and since then he has had no itching whatever.

It may be of interest to note that in all of these cases I have been able to segregate successfully the Streptococcus fæcalis, and have used the autogenous vaccine without much success, although in about thirty-six cases of pruritus ani, the autogenous vaccine of Streptococcus fæcalis worked like a charm. In fact, in one case in particular, a doctor, of Binghamton, N. Y., who had suffered from pruritus ani for over fifteen years, and who had tried almost everything that was invented either to relieve or cure itching, got no relief whatever until I had prepared for him a bottle of autogenous vaccine of a culture of Streptococcus fæcalis removed from one of his inflamed crypts, and which he injected himself. He obtained absolute relief from itching after the second injection, and when I last heard from him he was entirely well.

However, I consider the removal of the cause as the safest and most permanent form of treatment to effect a cure. The Streptococcus fæcalis, an aerobic bacillus, is one of the most frequent inhabitants of the crypts of Morgagni, and is the most frequent offender in causing cryptitis and its resulting pruritus ani. The injection of an autogenous vaccine (not a stock vaccine) has been successfully used in making the Streptococcus fæcalis inactive, relieving the pruritus, and in healing the inflamed crypt, but by slitting open the inflamed crypts and obliterating the canal as you would in a blind internal fistula, you entirely do away with any desirable or ideal location for the growth of the Streptococcus fæcalis.

345 West Eighty-eighth Street.

A Contribution to the Histopathology and Histogenesis of Syringomyelia.—G. B. Hassin (*Archives of Neurology and Psychiatry,* February, 1920) concludes that in syringomyelia we possess a number of specific pathological changes which totally differ from those to be found in any other spinal cord lesion—changes which stamp syringomyelia as a distinct anatomicopathological entity.

EXCISION OF CANCEROUS RECTUM THROUGH VAGINAL SECTION.

By Charles J. Drueck, M. D.,
Chicago,

Professor of Rectal Diseases, Post-Graduate Medical School and Hospital, Rectal Surgeon to People's Hospital.

In women patients the perineal removal of cancer of the rectum may sometimes be much facilitated by section of the posterior vaginal wall and perineum. The operation is practical only when tumor is movable, and is situated in the lower half of the rectum. If it is as high as the rectosigmoid junction, then the combined abdominal and vaginal operation should be employed. It is quickly performed with less technical disadvantage because ample working space is provided. There is less traumatism and hemorrhage, and consequently less shock. The technic can perhaps be best described in the following case:

Case I.—Mrs. D., aged forty-eight years, had borne eight children of whom six were living; the other two died in childhood. Menstruation was regular and normal up to eighteen months ago but none since then. About one year ago there was a protrusion at the anus about the size of a lima bean (said to have been a hemorrhoid), which disappeared under treatment by her physician, and had not reappeared. There was no protrusion at present. For the past six months she had lost blood from the anus. It came in gushes without relation to her bowel movements and was sometimes so severe as to cause her to faint. Her former weight was 200 pounds; weight today 163 pounds. She had had no formed bowel movements for the past two months, and lately had had only liquid stools obtained by the use of Epsom salts. There was a feeling of weight and a bruised or sore feeling in the rectum, but no definite pain. She said she could not have an evacuation without the use of cathartics, which produced a temporary flushing accompanied with much colic. She had abstained

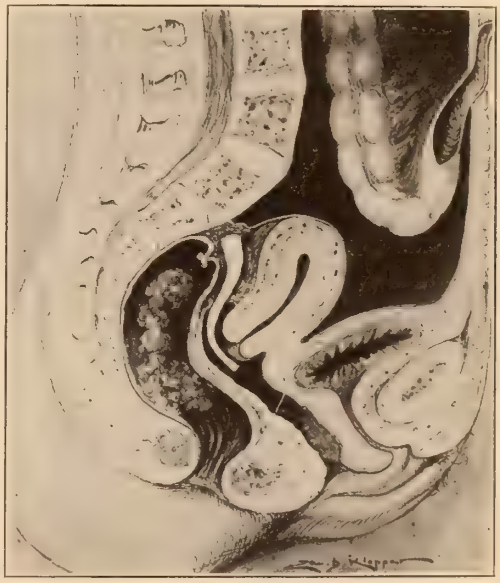


Fig. 1.—A schematic illustration of the location of the cancer.

from eating rather than use the salines and had subsisted on toast, soup and tea for the past month. Inspection of the anus was negative; it was in its proper location, not retracted and presented no protrusion.

In a digital examination of the rectum the finger entered the rectum for about an inch and a half, when it came in contact with an edematous fold of mucous membrane through which there was a very small passage. The index finger could not be introduced and the resistance was firm and hard. At the first touch the swollen mucous membrane felt like an intussusception, but the deeper feel of the mass behind was very different. The growth appeared free from the sacrum but attached to the uterus.

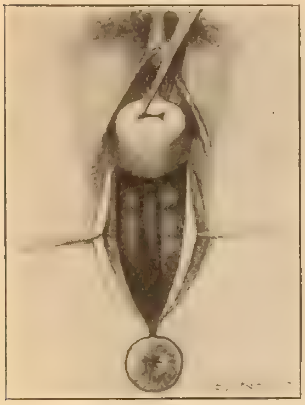


Fig. 2.—Vaginal wall incised and the rectum exposed.

Vaginally, the tumor was easily defined, beginning two inches from the vulva and extending up behind the cervix. The vaginal mucous membrane was free from the tumor, but the uterus was fixed. Bimanually, an index finger in the rectum and a hand above the pubes determined the mass almost filling the pelvis. The x ray photo showed a large mass filling the rectum, but no evidence of disease in the colon above. The patient was told frankly that she had a cancer of the rectum which was occluding the lumen of the bowel. This latter fact she realized all too well and also that she was starving on the diet allowed herself (Fig. 1.)

We suggested: 1. Exploratory laparotomy, at which time the bowel would be opened and an abdominal anus or a temporary inguinal colostomy provided, depending upon the conditions found within the abdomen. 2. If at this operation it was thought feasible to remove the tumor later, that such procedure would be recommended in two weeks, when she would be stronger than at present. The patient accepted operation.

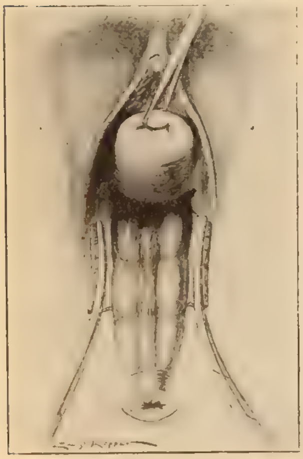


Fig. 3.—Rectum dissected free and the levator ani muscle divided and held by clamps.

The abdomen was opened with a long median incision through the linea alba, extending from below the umbilicus to close to the symphysis. A liberal opening was necessary to allow working space. The descending colon was palpated and found filled with hard fecal masses about the size of walnuts. No mesenteric glands were palpable, and no evidence of cancer was found in the descending colon. The liver was also found smooth, of normal size, and without metastasis. From these findings it was decided to excise the neoplasm, but because of its extent did not seem possible to bring down the sigmoid and reestablish the anus at its normal location. An abdominal anus was therefore decided upon.

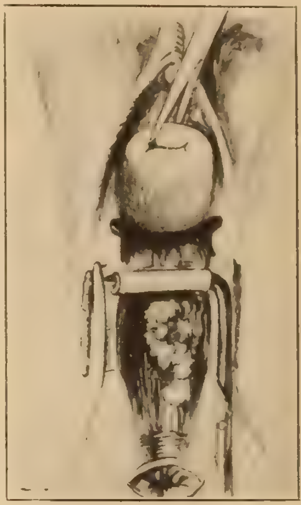


Fig. 4.—Tumor dissected free, grasped by intestinal clamp and excised.

Two weeks of convalescence were allowed, during which time intensive feeding was encouraged. The bowel was emptied and the toxemia relieved. The patient quickly rebounded from her depressed condition and was in an entirely more hopeful condition when excision of the rectum was recommended. She then received the usual preparations for a vaginal operation and was placed in the exaggerated lithotomy position, the hips slightly raised. A final examination was made under anesthesia and the tumor was easily mapped out by way of the vagina. It began just above the internal sphincters and extended up behind the cervix, but was free from both the uterus and sacrum and was movable in the pelvis. The perineum and vagina were cleaned once more. The rectum below the neoplasm was swabbed with hydrogen peroxide, dried with swabs, mopped with alcohol, again dried, and then filled with a gauze plug to occlude its lumen and fill it out, thus facilitating the subsequent dissection. The vagina was held widely open with broad retractors, the cervix held up with a vulsellum and a transverse opening in the vaginal wall made into the Douglas pouch. The posterior vaginal wall was then incised from the cervix to the fourchette, and the incision carried across the perineum to within a half inch of the anus, and a circular incision made around the anus. By blunt dissection laterally the vagina and perineal body were reflected from the diseased rectum (Fig. 2). As we reached the lateral borders of the rectum the levator ani and transverse perineal

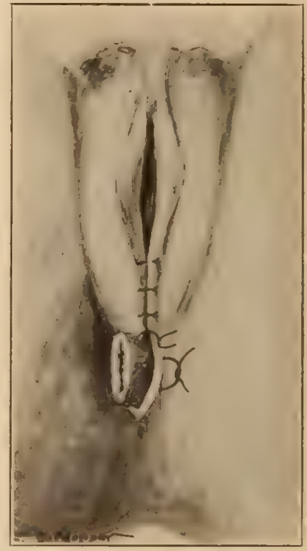


Fig. 5.—Closure of the perineal wound after the stump of the bowel had been brought down.

muscles were exposed and grasped with long forceps before cutting from the rectum (Fig. 3). These muscles contain the superficial and transverse perineal and the inferior hemorrhoidal arteries which will cause sharp hemorrhage unless seized before being cut. The number of these vessels is somewhat inconstant, and instead of there being one inferior hemorrhoidal artery, two or three small vessels may arise from the internal pudic. Therefore, active bleeders are to be looked for at all times and picked up as found. The small vessels and oozing are controlled by hot compresses held by the assistant. There need be very little loss of blood.

Beyond these muscles the dissection was quickly accomplished through the fatty tissues until the rectum lay wholly exposed except for its posterior attachments, the mesorectum and the rectococcygeus muscle. These attachments are firm and should be cut free with the scissors rather than torn away by blunt dissection, because tugging or dragging upon the sacral sympathetics increases the shock of the operation.

The rectum was now grasped in the left hand, the fingers working down behind sought the attachments and the curved scissors in the right hand clipped each as met; thus quickly cleaning out the hollow of the sacrum, taking with the mass all fat and lymphatics. By this technic the whole field of operation was always in sight, and the excision quickly and completely accomplished. (Fig. 4.) There was no dragging on the mesentery while trying to find an evasive brand that prevented prolapsing of the tumor. Traction on the mesentery while dissecting out the neoplasm causes much shock.

The tumor being removed, all bleeders were ligated and the oozing controlled with a few hot compresses. Closure of the wound was affected with catgut sutures, uniting the post cervical gap. When the levator ani muscle and the fascias were reached the clamps holding the muscles on either side were drawn together and the severed muscle united with mattress sutures of No. 2 catgut. Below this level the wound was closed with deep sutures. Drainage was provided from Douglas pouch into the vagina and also from the hollow of the sacrum out at the perineum.

30 North Michigan Avenue.

COLON INJURY IN NEPHRECTOMY.

By Weller Van Hook, A. B., M. D.,

Chicago.

The sigmoid and the splenic flexures of the colon are not far from the surgical route to the left kidney. The retroperitoneal tissues about the kidney may become agglutinated to the bowel and may hold the colon down near the kidney. If the kidney becomes enlarged or sacculated it may contact the splenic flexure. In such a case injury to the colon may take place during an operation on the kidney.

Case.—A patient with chronic and acute intestinal obstruction came under observation a few months ago. She was so distended, poisoned, and weak that a cecal fistula had to be made to give temporary relief. The history included the statement that a Polish surgeon had removed her left kidney about two years before, and that a fecal fistula had been left. This fistula gave relief from discomfort when patent, but, when it closed, great distress from bowel distention occurred. On the occasion when she was seen with Dr. Beseler, who called me in the case, she suffered from acute intestinal obstruction apparently due to scars about the bowel at the site of the old nephrectomy.

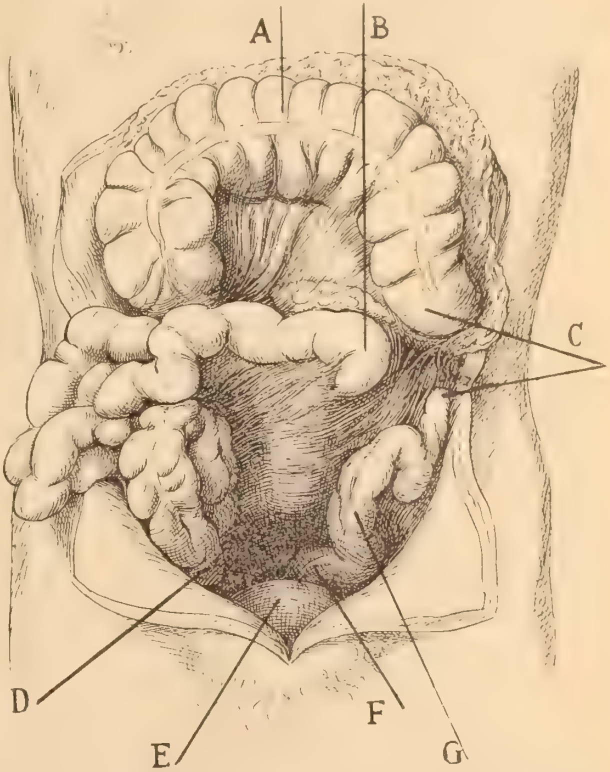


Fig. 1.—After Hildebrandt. Note that the splenic flexture retreats from the anterior part of the abdomen and rests almost upon the kidney. A, transverse colon; B, beginning of jejunum; C, splenic flexure; D, cecum; E, bladder; F, rectum; G, sigmoid flexure.

After the patient had entirely recovered from the intestinal obstruction, attack was made upon the real cause of trouble. The old nephrectomy wound was opened and extended downward, when it was

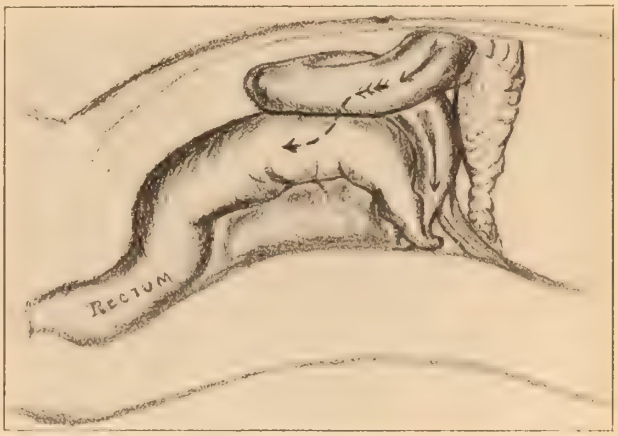


Fig. 2.—The point of almost complete occlusion of the colon is seen; and above is shown the arrangement of the coils of the colon so that the fecal current is accommodated after anastomosis.

easily seen that the splenic flexure was bound down, damaged and occluded as suggested in the picture. The bowel evidently had been caught in the clamp used to compress the kidney stump. Since there was no active disease at the site of occlusion, nothing was done at the immediate point of injury, but the bowel above was joined by anastomosis to the descending colon below. This procedure, colocolostomy, resulted in complete and satisfactory reestablishment of fecal circulation.

CONCLUSIONS.

1. Injuries of the left colon take place readily when left nephrectomy is practised.
2. Nevertheless, damage to such an extent that intestinal obstruction occurs must be rare and the result of gross carelessness.
3. In acute intestinal obstruction life is less likely to be sacrificed in most cases if a fecal fistula is established at the cecum for a few days. This tides the patient over the toxic period.
4. Colocolostomy satisfactorily reestablishes the fecal current, making it unnecessary to work at the site of scar contraction where wound infection from the bowel can occur so easily.

31 NORTH STATE STREET.

THE SOUL OF THE CONSUMPTIVE.

A Plea for Justice.[*]

By S. ADOLPHUS KNOPF, M. D.,
New York.

We all know something about the physical sufferings of the consumptive caused either by his tuberculous lungs, throat, or other organs which may have been attacked by the germ of the disease. We have heard his nerve racking cough, his hoarse, often scarcely audible voice, observed his gasping for breath, and know that he has pain in his chest, even when at rest, or on swallowing food if his throat is involved. We have felt his feverish hands, noticed his parched tongue, and sympathized with him because of these and many other distressing symptoms indicative of physical suffering.

I question, however, if many of us fully realize what the consumptive, rich or poor, young or old, suffers in mind and soul, beside his physical pains. We assert that tuberculosis, which is only another name for consumption, is a preventable disease. The late King Edward of England once said to a delegation of tuberculosis workers: "If, as you say, tuberculosis is preventable, why not prevent it?" This same question the rich or well to do consumptive may have asked himself, or may be still asking it. But before answering, I should like to ask him what he ever did in life to prevent the disease before becoming ill himself? Perhaps he never thought of his employees or of the thousand others who were working in ill ventilated workshops with no dust consumers, and living in dark and dreary tenements or insanitary individual dwellings where tuberculosis had become a house disease. Perhaps he never thought of having the men and women working for him examined periodically so that any case of tuberculosis among them might be detected and the other still healthy employees prevented from becoming infected. It may never have occurred to the rich employer, now a consumptive, that when still at the head of his business, he should have seen to it that any one of his employees who had been found afflicted was cured by being taken care of at the right time and in the right place, and not as Dr. Pryor so well says, at the wrong time and in the wrong place, when it was too late to accomplish a cure.

Such thoughts will cause the well to do consumptive sufferings which are difficult to describe. While his physical pains and discomfort, thanks to his abundant means, can be lightened, this suffering of the soul, because he failed to do his duty toward his fellowmen, many of whom have now become his fellowsufferers, becomes more intensified as the disease progresses. It is all the more present in his mind because he knows that the suffering of the poor consumptive in both mind and body is a thousand times more intense than his own. The physical sufferings are alleviated in his case by a sojourn in a health resort, a costly private sanatorium, or a luxurious home where the sanatorium treatment can be carried out under the watchful care of a skilled specialist; the poor consumptive, on the other hand, because of lack of sanatorium facilities, often has to remain at home and there, because of limited means, is deprived, if not totally to a large degree, of the comforts and facilities which help toward the cure. The well to do consumptive may have the assurance of a cure after a reasonable length of time, but the poor consumptive is far from having this absolute assurance. He counts the days to the time when he hopes to be able to work and be no longer a burden to his family and the community.

I am free to confess that I do not share at all in the opinion of a certain tuberculosis specialist and author who, in his recent textbook, gives the following characterization of the tuberculous patient: "The consumptive becomes egotistical and egocentric. He is interested in the welfare of but one person—himself—to the exclusion of all who have depended on him before. He will eat costly food while his children starve; he will make unreasonable demands on his relatives and friends and show no gratitude. . . . The ascendance of selfishness plays the most important rôle in the molding of the mental traits of the tuberculous." I have always looked on this statement as a veritable libel upon the character of the consumptive, if indeed he may be set apart as having special characteristics because of his disease. An experience of over twenty-five years among the tuberculous poor, in humble cottages and dreary tenements, in public sanatoria and hospitals, has convinced me that the very contrary is characteristic of the heart, mind, and soul of the consumptive. How many times have I heard some one among them say: "If I only were rich, doctor, I would know how to solve the tuberculosis problem." I never refuse to listen to their schemes, which are sometimes fantastic, but never egotistical. They think of saving others even when realizing that they cannot be saved themselves.

Tuberculosis, particularly of the pulmonary type, attacks, principally, men and women between the ages of eighteen and thirty-five—the golden age of youth, of love, of aspiration, of hopes, and dreams. The most important events are often crowded into these fifteen to twenty years which are usually known as the best in life. To understand their feelings, one must have had the sad duty of informing a young person with all life before him of the fact that he is tuberculous, that he must for the time being abandon all work and devote a year and perhaps two to getting well. The young person to whom such a declaration has been made, apparently acts as if he or she believed in the doctor's assurance of the curability of the disease, but the old fashioned idea that tuberculosis is incurable still lurks in the minds of the masses, and doubts of the curability, in spite of the doctor's assurance, will arise in the mind of the newly discovered tuberculous invalid. But even if he is of an optimistic disposition and believes in the favorable prognosis in his case, if he is poor or only of moderate means, has an old father or mother, an invalid brother or sister, or wife and children dependent upon him, his suffering of soul begins right then and there. He is worried because he cannot provide for them, and not only does the thought haunt him that his wife and children may suffer for want of food, raiment, and even shelter, but in addition to this there is often in the mind of the conscientious consumptive a fear that he may give the disease to some one near and dear to him in spite of the precautions he tries to take. The social workers and auxiliaries of such societies as are represented here tonight, consider it always as one of their most important tasks to relieve the anxiety of the patient concerning his family by providing amply for their needs. The consumptive's fears that he may be the source of tuberculous infection can only be counteracted by education imparted by the physician and the nurse.

---

[*] Address delivered by invitation before the Christmas Seal Campaign of the New York Tuberculosis Association, December 1, 1920.

Thus we see that the sufferings of the consumptive, rich or poor, man or woman, are not confined to the body, and alas! this is also true of the children. Tuberculous disease in children is most frequently situated in the joints and bones, and absolute rest of the afflicted members of the body often becomes an urgent necessity; in other words, the child is compelled to remain still, often even confined to bed. He cannot play as other children do. When others romp around in field, in garden, or on the streets, as they must do in our great cities for lack of playgrounds, he can only look on. He may not even be able to enjoy school life as others do, and he lacks the companionship and comradeship which makes child life so happy and delightful. This tuberculous child suffers as much in mind and soul, and perhaps more so, than in body.

Lastly, there is that strange disease known as phthisiophobia, with which not the tuberculous but the nontuberculous are afflicted. It is an exaggerated fear of the presence of anyone afflicted with pulmonary tuberculosis. This tuberculosis phobia, or phthisiophobia, has caused and is causing more suffering to the consumptive than it is possible to imagine. People will object even to the presence of tuberculosis sanatoria and tuberculosis hospitals, and yet the safest place not to contract consumption is in just such an institution, where the greatest possible care is taken with the expectoration, which is virtually the only source of infection. People will not employ even the recovered consumptive and some are afraid to touch him or associate with him. Tuberculosis is indeed a public menace, and with the prevalence of the disease we cannot be certain that some day we ourselves or someone very dear to us may not be stricken with it. And yet, there is no more danger in association with the consumptive who is conscientious in the disposal of his sputum than with any well person; therefore let us treat him kindly and considerately.

In speaking above of the rich consumptive as unmindful of his obligation toward his fellow sufferers and fellowmen in general, I do not wish to be understood as implying that this is always the case. There are now any number of corporations and employers of large bodies of men and women who do look after the health of their employees, and it has been my rare privilege to treat some wealthy tuberculous patients whose hearts ached for the less fortunate sufferers among the poor and who gave freely of their worldly goods. I know of a number of instances among those who were hopelessly ill where a large part and sometimes even the entire fortune was left for the care of the consumptive poor. They often suffer in soul because of their inability to do more, knowing by personal experience how much is needed to combat this disease among the poor and those of moderate means.

And now, having told you of the suffering of the soul of the tuberculous rich and poor, young and old, I come to plead for them—not for mercy, not for charity, but for justice. Let the employer do justice to his employees by periodical examinations for tuberculosis and providing proper sanitation for factory, workshop, and store. Let him see that the worker found to be tuberculous receives proper and timely treatment. Let the municipality of cities, towns, and villages see to it that there are no insanitary dwellings, and that such other insanitary conditions which may predispose to tuberculosis may be done away with in the community. Let every community provide sanitary school buildings and see that the curriculum is such that the mental training of the child is not pushed to the neglect of its physical development.

The New York Tuberculosis Association, in cooperation with the city's Health and Public Welfare Departments and by its educational work, teaches all this to our own and other municipal authorities, employers, and school boards, and tries to prove to these latter why there should never be a public or private school of any size without some open air classes. To the people at large it teaches that tuberculosis is a preventable and curable disease. In its clinics thousands of men, women, and children are annually examined, and thus many cases of tuberculosis are discovered at the right time and the association sees to it that the patient is properly cared for. By its auxiliaries to the tuberculosis clinics, it gives financial relief to tuberculous families in distress. By its model sanitary workshops, its vocational training, and its employment bureau it enables the tuberculous invalid, or the recovered tuberculous patient, to make an honest living without running the chances of a relapse.

Bearing in mind that the protection of children from tuberculous disease and the cure of those already afflicted is, after all, the essence of the solution of the tuberculosis problem, this association has started a health centre for babies and parents so that there shall be prenatal care, infant welfare work, care of the children during their preschool age, preventoria for children strongly predisposed to tuberculosis, etc. In short, all that can humanly be done to prevent tuberculosis and to cure those afflicted with it, this association and one thousand others throughout the United States are trying to do. It appeals for financial help and encouragement; it appeals to all able to help in this great crusade which has for its purpose the lessening of the sufferings of mind, body and soul, and rendering happy, healthy, and useful thousands of our fellowbeings who otherwise might be doomed to be a burden to the community and to a lingering death, accompanied by indescribable suffering. The association appeals for justice to the cause of the tuberculous sufferers who contracted the disease by no fault of their own. It is our duty to help them; let us hasten to embrace this opportunity for service to God, country, and our fellowmen.

16 West Ninety-fifth Street.

LONDON LETTER.

(From Our Own Correspondent.)

Treatment of Patients on the Borderline of Insanity—Care of the Mentally Deficient—Medical Education in Great Britain—Cancer Research—Clinics for Mental Diseases.

London, *November 30, 1920.*

The treatment of insanity is now conducted upon more intelligent lines by far than was formerly the case. It is recognized that certain forms of mental disorder, which not long ago were regarded as hopeless, are amenable to proper treatment. Of course, it is largely a question of correct diagnosis and treating the disease while in the incipient stage. It is only within comparatively recent times that any provision has been made for the observation and treatment of what are known as borderline cases. In the Ministry of Health bill introduced a short time ago in the House of Commons, are new legislative proposals concerning the treatment of incipient mental disorder. Clause 10 of this bill deals with the treatment of incipient mental disorders and contemplates that a person thus suffering may be received in homes, institutions, or houses. An individual may be discharged from one of these places if he delivers to the superintendent or other person having charge, or sends by post to the Minister of Health, a notice in writing that he desires to be discharged. This clause was sharply discussed by a committee of the House of Commons, which addressed itself to the problem of combining treatment and freedom of personal action on the part of the patient. In accepting an amendment that the notice to the minister should be one of forty-eight hours, Dr. Addison, Minister of Health, said he wanted to have these institutions as free as possible for the people to go out. The forty-eight hour limit was necessary in the case of a letter sent through the post. Lieutenant Colonel Raw proposed an amendment to provide that in the case of the mental incapacity of a patient, the consent might be given by the nearest relative. This was opposed on the ground that its adoption might lead to abuse. A husband, for instance, anxious to get rid of his wife, might quarrel with her, say she was mentally unfit, and have her placed in a home against her will. Dr. Addison said if the clause was not amended in the way suggested, it would shut out a large number of shell shock cases where the sufferers in the early days were not competent to sign their names. He admitted that the acceptance of the amendment might lead to an increased opportunity for scandals to arise. Personally he would vote for the amendment which was rejected. The clause with the amendment that the notice to the minister should be one of forty-eight hours was agreed to.

* * *

Under the auspices of the Central Association for the Care of the Mentally Deficient, a conference on mental deficiency was opened on November 25th last at Church House, Westminster. Among the speakers was Sir George Newman, chief medical adviser of the Ministry of Health, who said, in part, that the responsibility of the State lay in the duty of finding out mentally defective children. If money was not spent on their training it would be spent because they would become a charge on the State. The child's training must consist, not in making him capable of passing an examination, but of converting him or her into a good citizen. A resolution was passed urging legislation to enable local educational authorities and authorities under the Mental Deficiency Act to combine in the provision of institutions.

The problem of treating mental disorders in their incipiency and preventing insanity as far as possible, and of so training mental defectives that they may become useful rather than harmful, is one that confronts every country of the world. It is also increasing in its gravity. Unfortunately, mental defectives are numerous in all civilized countries, and are a public menace. The result of legislation in Great Britain to offset the evil effects of mental deficiency is a step in the right direction, and will doubtless be watched by the governments of other countries with the closest interest.

* * *

The matter of medical education in this country was made a subject for discussion at the meeting of the British Medical Council, which opened on November 23rd, under the presidency of Sir Donald Macalister. Introducing a report on professional education before the council on November 25th, Dr. John Yule Mackay, chairman of the education committee, said that the undue stress which was laid on the test by written examination frequently repeated was a weakness and source of danger in the British educational system. The habit of judging progress in study by a method which demanded severe but spasmodic efforts directed toward the repetition of details often unimportant, and usually only partially understood by the pupil, was unfortunately growing and tended to obscure the true purposes of education. In medicine today the exigencies of the examination tended to dominate both teaching and study.

It has long been recognized by many of those best qualified to judge that the written examination in all spheres of education has been abused. Perhaps the folly of paying too great attention to the written examination has been most in evidence in medical education. A brilliant man, one who imbibes his facts easily, will cram for a written examination, pass with flying colors, and forget a good deal of this undigested matter in a short time. The written examination does not by any means always constitute a reliable test of a man's knowledge, nor, it must be added, are the questions asked calculated in many cases to yield the best results in the long run. As Dr. Mackay said, unimportant details are frequently pushed into the foreground while really essential points are left severely alone.

The question of written examinations in medicine and surgery is one that needs discussion and consideration in all countries and one upon which valuable reports might be composed.

* * *

At the home of the Medical Society of London, Professor J. B. Farmer, of the Royal Society of Science, South Kensington, lectured on Some Biological Aspects of Disease on the evening of November 25th. He urged a more comprehensive and thorough investigation of the cancer problem than had so far been attempted. He asked, Were the people of Great Britain prepared to go on watching the daily ravages of an unsparing foe without doing everything that was humanly possible to check its course? It appeared to the speaker that the full magnitude of the task had not been sufficiently realized. A dozen or more of the first rate men attached to research in the different relevant branches of science should be working in collaboration, and they ought to be provided with the means of attracting to their laboratories a number of able research students.

Professor Farmer is perfectly right in criticising the attitude of the British public toward scientific research. The average man here regards the question with contemptuous indifference, and will not put his hand into his pocket to assist the advancement of research. He does not understand its value and, therefore, through ignorance, depreciates its usefulness. He requires to be educated himself. As is truly said in an editorial in the *Medical Press and Circular* for November 24, 1920, the British people grudge the expenditure of public money on science, and, despite the lessons of the war, that grudging is being actively pursued. Doubt may be felt whether Great Britain will ever understand that a nation which lays itself out to develop science places itself in the position of cultivating an unlimited field of wealth. The discoveries of science must always lead the way in the advancement of industrial occupations. But so it is that science is "starved," starved by the fear of money being spent upon that which will produce unremunerative results.

This statement emphasizes the point that the British lack of appreciation of scientific research and of medical scientific research in particular is largely due to a want of comprehension of the subject in all its bearings. If a nation is not generally healthy it cannot long be prosperous, as a healthy nation has a manifest advantage over one that is handicapped by disease and invalidity. The British public must be educated to understand this point of view before money will be given freely in aid of medical research. However, among the persons who should understand the situation, the presumably educated rich, there is displayed a niggardliness toward contributing to assist the advancement of scientific research which is astonishing. In America money is poured out without stint to aid in the progress of science. The idea appears to be grasped in America that money spent on science and on medical science is money well spent. It comes back with compound interest. To lay bare the secrets of disease and to prevent its occurrence is only possible with the assistance of medical research. The country that is healthy and has made the most intelligent use of science in all its forms will easily be the most prosperous and contented. Until the mass of the inhabitants acquire a conception and appreciation of the value of science, it cannot keep abreast of the countries that do these things.

* * *

The problem of dealing properly with mental disorders has been referred to already in this letter at some length. However, as it is an extremely important subject, it will not be superfluous to comment upon other aspects of the matter. In Great Britain only one hospital, the Lady Chichester Hospital for Women and Children at Hove, Sussex, specializes in all forms of nervous and mental breakdown in their early stages. This hospital has just published a short survey of its work for the past fifteen years. It states that experience gained in the hospital strikingly confirms the arguments which the leading mental specialists are now urging in favor of establishing clinics for the treatment of such diseases in connection with the general hospitals. Under the present system no hospital treatment is provided for nervous and mental patients until they have reached the certifiable, and, therefore, in the majority of cases, the incurable stage. What is urgently needed is that sufferers from these diseases should have exactly the same prompt and easy access to treatment as the sufferers from any physical disease. The treatment pursued at the hospital was most successful, and it is stated that it has a waiting list five times more numerous than the patients under treatment. The psychopathic ward as known in America is unknown here, but great interest is now being evinced in the question, and it appears certain that some will be established in general hospitals in the near future.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, fifty cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, JANUARY 1, 1921.

SEASON'S GREETINGS.

To our readers, contributors, advertisers, and friends with whom we have spent the none too short nor untroubled year, we extend our warmest greetings. From the signs on every hand the immediate future seems none too lacking in the demands it will make upon us to face stressful situations. It is only by recognizing things as they are and not as we would have them that we shall be able to meet them whole heartedly and unafraid. We extend our greetings and our hand to you all and trust that we can go together toward the goals of progress with the knowledge that striving makes strength. We thank you for your cooperation in the past. It has made the struggle worth while. We trust that we may act as an inspiration and make your task the more worth while and easier of fulfillment. Let us meet the New Year with strong hearts, with belief in ourselves and one another.

MEDICINE AND AGRICULTURE.

Under the term agriculture, doctors are now to study all that pertains to foods and breeding and to drug production. The farmer, the veterinary, the botanist, the chemist, will henceforward find a place at medical meetings, for the gentle cow, the frolicsome lamb, the silvery fish may harbor disease in life and give it to man when dead. Plants themselves have foes, which make them enemies of man. We pay highly for imported drugs which flourish in our field. Epidemics destroy our stocks, thereby the price of food is raised and people suffer in health. So that the whole science of healing seems likely to resolve itself into the great question of cooperation of the entire scientific world, for, truly, no one body can be rejected without loss to the whole.

An Indian doctor draws attention to the further knowledge and cultivation of Indian drugs, saying that although the British Government has acted wisely in appointing directors, yet it would have been better to have selected some native medical practitioners who thoroughly know the plants and know also their Ayurvedic materia medica. India abounds in medicinal plants, but only comparatively few are really known, and yet are used empirically as household remedies. Every step and process should be recorded in the scientific journals, meritorious work receiving reward, and suggestions invited.

Veterinaries in foreign lands are forging ahead guarding our food supplies by scientific investigations. One member of the Royal College of Veterinary Surgeons has been to South Africa, inoculating Mbosi cattle for rinderpest, and found laminitis general. The animals became lame, had no milk, and wanted to lie down. Sir Arnold Theiler has proved that Crotolaria burkeana is responsible. The veldt is rich in leguminous plants, and game of all kinds assemble for feeding during the dry season.

Even camels are being studied, as 86.52 of those on service in Mesopotamia died, but it must be remembered that special knowledge is required and few of the keepers had ever seen a camel outside a zoo. Two men in India are endeavoring to fight the Syngamus laryngeus in Indian cattle and buffaloes. The parasite is found attached to the interior of the larynx; there are symptoms of coughing, loss of condition, and speedy death. Ten or twelve pairs of worms on the mucous membrane of the larynx were found postmortem.

The chemists and botanists who were in government service during the war are now making wide voyages in little explored places to gather and test proposed substitutes. One man we know went from London away to the forests of Buenos Aires, another to the remote parts of South Africa.

The work of the bacteriologist is still conquering. Slowly, slowly, the unknown evils which devitalize the grand tree and the ponderous buffalo, man in his prime, the cradled baby, are discovered, and will utterly be destroyed when the great army of cooperative research is no longer merely an idea.

TRANSFUSION OF BLOOD.

It is now a truism to state that transfusion of blood established its value during the war. It certainly did so, and, of course, new and more effective methods of carrying out the procedure were evolved. Although no method can be said to be unsusceptible of improvement, it can be stated unreservedly that satisfactory methods of blood transfusion have been thought out and practised. At a meeting of the Edinburgh Medico-Chirurgical Society, held on November 4, 1920, Mr. J. M. Graham read a paper on transfusion of blood, basing his observations on seventy-five cases. He pointed out that the first question is the choice of a suitable donor, and that in all cases, except in newborn infants, preliminary tests must be done to preclude the risk of the patient's serum hemolyzing the donor's corpuscles. This is a very important point and should be ascertained definitely before transfusion is commenced. As hemolysis is always preceded by agglutination of the corpuscles, the patient's serum is tested to find out if it agglutinates the donor's corpuscles. If it does not do this the donor is satisfactory. There is no need to describe the technic of this test.

As for the method of transfusion, Graham agrees with the majority of those who have had experience, that the simplest method is by the use of a solution containing such a salt as sodium citrate, of which two per cent. is required to prevent clotting. He uses a three and eight tenths per cent. solution, which, when diluted with nine volumes of blood, gives a strength of thirty-eight hundredths per cent., thus allowing a small margin on the right side. Graham thinks this solution is quite as effective as whole blood in cases of hemorrhage, but there is a greater tendency for a reaction to occur. He does not recommend the direct arm to arm method, as it is difficult and necessitates the sacrifice of a radial artery, and also the volume cannot be measured. In his opinion the chief indications for transfusion are serious hemorrhages, especially in the absence of complications, and when the bleeding point can be controlled. In hemorrhages with slight shock it is also indicated, and also as a preventive of shock in operations on anemic patients. In cases where shock is marked, results are unsatisfactory. In chronic anemia, results are doubtful; but when other treatment has failed and there is no discoverable primary disease to prevent recovery, it should be tried. In malnutrition of infants, especially where the infant is reduced to the stage of collapse, there is often striking benefit seen, but results as a whole are doubtful.

Perhaps the best results from transfusion are witnessed in pernicious anemia. Graham states that out of thirty-eight cases there was definite improvement in twenty-one, a very satisfactory outcome. Results were better when whole blood was given. In these cases transfusion was recommended because the symptoms were progressive or stationary, in spite of the usual treatment, and because the patients were in a critical condition. The signs of improvement lasted a variable time, but the blood counts never returned to normal, and the expectation of life for a few months was small. The chief value of transfusion in this disease is that it might stimulate the marrow in such a way that a patient tolerates arsenic better and improves until a subsequent relapse occurs.

In the main Graham's views are in accord with others who have had a good deal of experience of transfusion during the war. It should be borne in mind that Robertson, of Toronto, was a pioneer in evolving new methods of blood transfusion, and that Primrose, also of Toronto, did much good work in the same direction. Transfusion was one of the surgical procedures which was greatly advanced through war experience. Valuable knowledge was gained which will undoubtedly be put to good use, and especially so in industrial surgery.

PHYSICIAN AUTHORS: DR. JOHN BROWN

Of all the literary canines that go yapping and yelping through the pages of literature, right away back to the mythical hounds which Diana kennelled on Olympus and down to the present day assortment of magazine and twelvemo collies and terriers, none is more famous that Dr. John Brown's old, grey and brindled mastiff, Rab, "as big as a Highland bull" but much more lovable. The story of *Rab and His Friends* is known wherever English is spoken and holds its own as one of the finest dog stories ever written. There are many who would call it the finest. It is part of what Andrew Lang called "the light but imperishable literary baggage" which Dr. Brown left to posterity, for his fame greatly exceeds the measure of his literary output. It is built upon a few essays and sketches, but chiefly it rests upon the story of Rab. *Rab and His Friends* was published first in 1859. Brown wrote it between twelve and four of a summer morning, it is said.

> Ye stapped your pen into th' ink
> An' there was Rab,

as Robert Louis Stevenson wrote in his poem, "To Dr. John Brown." Stevenson was one of the many great ones of the earth who have been fond ot Rab. It is doubtful if any other short story ever elicited as much praise from so many eminent admirers. Their tributes would fill a large book.

Dr. Brown's small literary output was due to the fact that most of his life and energy were given over to the practice of medicine. He was the most eminent physician of Edinburgh of his day, and "thoroughly devoted to his profession." J. Taylor Brown, writing in the *Dictionary of National Biography,* points out that it is doubtful whether Brown, for all his wide culture, would ever, but for his love of his profession, have been induced to appear before the world as an author. His first volume, *Horæ Subsecivæ* is almost exclusively devoted to subjects bearing on the practice of medicine, such as the importance of the wide general culture of a physician, the distinction to be always kept in mind between medicine as a science and medicine as an art, the necessity of attending to Nature's own methods of cure and leaving much to her recuperative powers rather than to medical prescriptions, and, in general, the value of presence of mind in a physician.

Horæ Subsecivæ was one of three volumes that comprise Dr. Brown's literary output. We are told that editors and publishers had to importune him to write, and that his answer invariably was that one should not venture to publish anything "unless he has something to say and has done his best to say it right." "Herein lay the secret of his writing so little and of the surpassing charm of what little he did write," says *Chamber's Cyclopedia of English Literature.* "Dogs, children, old world folks, friends gone before and Lowland landscapes—these were the subjects he wrote on best. Humor is the chief feature of his genius—humor with its twin sister, pathos. We find them both at their highest perfection in his sketches *Rab and His Friends* and *Pet Marjorie.* Writing of nothing that he did not know, he wrote of nothing he did not love, at least of nothing that he did not greatly care for—hence both the lucidity and the tenderness of his essays. They rank with Lamb's, and with Lamb's alone in the language."

In recent months there has been renewed interest in his sketch of *Pet Marjorie,* due to the somewhat sudden craze for the writings of child literary prodigies that has sprung up since Daisy Ashford burst in on an unsuspecting public with *The Young Visiters.* Pet Marjorie, whose full name was Marjorie Fleming, before her death in 1811 at the age of eight, had written reams of journals and poems, including a two hundred line epic on Mary, Queen of Scots. She and Sir Walter Scott were great chums. Her biography, written for the *Dictionary of National Biography* by Sir Leslie Stephen, is, as Sir Leslie said, "probably the shortest to be recorded in these volumes, but she is one of the most charming characters." Equally charming is the essay Brown wrote of her.

Dr. Brown was born at Biggar, Lanarkshire, Scotland, on September 22, 1810, and died in Edinburgh on May 11, 1882. He attended a private school at Edinburgh from 1822 to 1824, then spent two years at the Edinburgh high school, after which he attended Edinburgh University, where he began the study of medicine in 1827. From 1828 to 1833 he was apprenticed to Dr. James Syme, one of the most famous surgeons of his day, and obtained his medical degree at the university in 1833. He spent the rest of his life in Edinburgh in the practice of medicine. In his medical capacity he is said to have been remarkable for his close and accurate observation of symptoms, his skill and sagacity in the treatment of his cases and his conscientious attention to his patients. "He was a man of rare sweetness of disposition and charm of manner," says Andrew Lang. "I have never known any man to whom other men seemed so dear—men dead, men living. He gave his genius to knowing them, and to making them better known, and his unselfishness thus became not only a great personal virtue, but a great literary charm."

THE TUBERCULOSIS PROBLEM OF THE PRESENT DAY.

Because before the war the tuberculosis mortality had been on the decrease in nearly all civilized countries, and particularly in our own, there is no doubt that its present increase throughout Europe and to some extent also in our own country is a consequence of the war. In Central Europe the situation is appalling and Mr. Hoover is asking for $33,000,000 to feed the 3,500,000 starving children, many of whom, by reason of underfeeding and privation, are already tuberculous or will become so if succor does not come soon. Mr. Hoover wishes to devote $10,000,000 of the $33,000,000 to medical relief. It is our earnest hope that this good and great man will get all he asks for to accomplish what may be considered the greatest humanitarian work ever done by the American people. However, we must not forget that here, too, we have a tuberculosis problem toward the solution of which we must devote our energies. In the United States it is perhaps not so much malnutrition and want of proper clothing as the congestion resulting from lack of housing facilities in our large cities which is responsible for the increase of tuberculosis. The congestion today in our own city, particularly in the tenement house districts, is something fearful. Total ignorance of sanitary regulations among a large class of the population in the congested districts adds to the spread of the disease. Aside from this, we are in midwinter and the problem of unemployment on an unprecedented scale is staring us in the face.

In Dr. Knopf's article, entitled The Soul of the Consumptive, which appears in this issue, a graphic description is given of the mental sufferings of consumptives, the rich and poor alike. When we add to this the physical sufferings of the tuberculous invalid, it certainly must be obvious that there is much work to do yet for the housing, general social betterment and education of the masses. The New York Tuberculosis Association is in great need of funds to do its work in cooperation with the health and public welfare departments of this city. This association helps to maintain our tuberculosis dispensaries, has a model sanitary workshop for vocational training, maintains a health centre for babies and parents, coordinates other charitable institutions in relief work, and gives financial aid to families in distress. The New York Tuberculosis Association has for its president Dr. James Alexander Miller, for its secretary Dr. Nathan E. Brill, for its treasurer Mr. Thomas W. Lamont, and for its director Dr. John S. Billings, with offices at 10 East Thirty-ninth Street, New York City. On the board of directors are such distinguished medical and social workers as Dr. and Mrs. Hermann M. Biggs, Dr. John W. Brannan, Dr. Royal S. Copeland, Dr. Haven Emerson, Mr. Homer Folks, Dr. Lee K. Frankel, Mrs. W. E. S. Griswold, Mrs. James E. Newcomb, Miss Blanche Potter, Dr. George M. Price, Mr. Lawson Purdy, Mr. Fred M. Stein, and Mrs. William G. Willcox.

The national association, of course, has a still greater field of usefulness than the local association. Besides coordinating all the state and local associations and other agencies in the fight against tuberculosis, this association has a publicity bureau and a number of traveling exhibits, publishes a sanatorium directory, promotes needed federal legislation and health programs, and standardizes all forms of antituberculosis work. The work of the association is accomplished through correspondence, field work by staff representatives, annual meetings of sectional conferences, conduct of interstate campaigns, such as the Red Cross Christmas Seal sale, tuberculosis week movement, general publicity, publication of research studies, literature, bulletins, and, in general, by serving as a clearing house for information and advice on every phase of the tuberculosis problem. The National Tuberculosis Association also publishes a most reliable scientific journal. A review of its November number appears in our present issue, which speaks for itself. The name of the journal is the *American Review of Tuberculosis.* The officers of the National Tuberculosis Association are Dr. Gerald B. Webb, of Colorado Springs, president; Colonel George E. Bushnell (retired), of Bedford, Mass, honorary vice-president; Dr. George M. Kober, of Washington, D. C., secretary; Mr. Henry B. Platt, of New York, treasurer; Dr. Charles J. Hatfield, of Philadelphia, managing director; Dr. Philip P. Jacobs, of New York, publicity director; Mr. Frederick D. Hopkins, of New York, administrative secretary. The board of directors is composed of leading specialists and social workers of nearly every State in the Union. The office of the association is located at 381 Fourth Avenue.

Any reputable physician in good medical standing and any layman honestly interested in the control of tuberculosis and is not engaged in an enterprise foreign to the ideals of the association is welcomed to membership. The dues are five dollars a year. Members of the association are entitled to receive a number of valuable publications, including the *Journal of the Outdoor Life,* a monthly magazine and the official organ of the association; the *Monthly Bulletin* of the association, and various other interesting and instructive publications which are issued from time to time, such as *Transactions, Tuberculosis Directory,* and various special volumes and studies. Members are also entitled to receive the *American Review of Tuberculosis,* at the reduced price of two dollars a year.

BARBERS, EAST AND WEST.

Dr. Arjan Das, in the *Indian Medical Journal,* deplores the fashion for cropped hair which is gaining in India. He says hair is an additional ornament for a rich woman, and often the only ornament of the poor. "In man if the hairs are well combed, oiled, and parted, either in the centre or side of head make one look like a gentleman." The shaving of mustache and the epilation of nasal hairs is bad, as they prevent the introduction of even minute particles of dust entering the nose. Worse still is the increasing practice of shaving the beard as this protects the throat and hinders dental neuralgia. If shaved, the man looks like a eunuch. "Now I see boys and young men with beard and mustache shaved, and they call this Curzon fashion. Shaving has become the fashion both with Hindus and Mohammedans, though a bearded man among the latter is still shown more respect, and the mustache is clipped only as a religious rite."

THE INDEX.

The index for the volume covering the past six months will be published separately. A copy will be mailed to any of our readers who will write for it.

News Items.

Beer for Medicinal Purposes.—It is reported that a Wisconsin brewery has asked permission to make beer for medicinal purposes. The request has been refused for the present.

Gift to Vienna Charities.—Richard Strauss, the composer, has placed a part of the proceeds of a successful South American tour at the disposal of Viennese charities. The amount is estimated at three million kronen. Theatrical funds are to benefit, but most of the money is to be used to feed the children.

State Clinics for Mental Disease.—Three new state hospital clinics for mental disease have been established recently, increasing the total number to forty-one. One of these clinics is at Warsaw, Wyoming County, one at Glens Falls, and one in Geneva. The reestablished Peekskill clinic of the Hudson River State Hospital held its first session on November 5th.

Medical Director of League of Red Cross Societies.—Colonel F. F. Longley, chief of the Department of Sanitation of the League of Red Cross Societies, has been appointed acting general medical director of the league following the departure of Dr. Hermann M. Biggs, health commissioner of New York State, who had temporarily assumed the duties of general medical director.

Dr. Mosher Sues Nassau Electric Railroad.—Dr. Burr Burton Mosher, of 11 Schermerhorn street, Brooklyn, has brought suit for $150,000 damages against the Nassau Electric Railroad Company for injuries he received on February 22d, last, when his motorcar was struck by a trolley at Atlantic and Flatbush avenues. It is alleged that the injuries compelled the doctor to abandon his activities, which had been numerous and varied, despite his sixty years.

Urological Department Opened at New York Hospital.—The New York Hospital announces the opening of the Urological Department in accordance with the terms of the will of the late James Buchanan Brady. Temporarily indoor quarters have been assigned to the department in the hospital at 8 West Sixteenth street. The out patient clinic will be carried on in the out patient department of the hospital at the following hours: men: daily, 10 to 11 a. m. (except Wednesday) daily, 7 to 8 p. m. (except Tuesday). Women: Tuesday, 7 to 8 p. m., Wednesday, 10 to 11 a. m.

Insanity Damage Suit.—Dr. William B. Gibson and Dr. Walter Lindsay are the defendants in a $1,000,000 damage suit brought by Ada M. and Phoebe K. Brush, formerly of Huntington, L. I., who were released from the State Hospital for the Insane at Kings Park, last March. The physicians signed the papers committing the women to the asylum, where they were confined ten years. The complaint alleges that the women were not insane when committed. Each of them is demanding $250,000 damages from each of the physicians. The actions are brought in the Supreme Court of Westchester County.

Harvey Society Lectures.—Dr. Alfred F. Hess, of the New York University and Bellevue Hospital Medical College, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, January 15th. His subject will be Newer Aspects of Some Nutritional Disorders.

Rockefeller Foundation Grant for Cincinnati University.—The general education board of the Rockfeller Foundation has offered to contribute $700,000 to the Medical College of the University of Cincinnati, on condition that the balance of $400,000 to complete the $2,000,000 endowment fund be subscribed.

To Fight Antivaccination.—A public meeting will be held in Borough Hall, St. George, Staten Island, Friday evening, January 7th, to fight the recent movement against vaccination. Among the speakers will be Dr. Royal S. Copeland, health commissioner, Dr. Leland E. Cofer, health officer of the Port, Dr. Walter H. Park, director of health department laboratories, and Dr. S. Dana Hubbard, of the health department. Borough President Van Name will preside at the meeting and the Medical Society of the County of Richmond will attend in a body.

A Dinner to Dr. Keen.—A dinner, followed by a reception, will be given to Dr. W. W. Keen of Philadelphia, by his friends and associates, on his eighty-fourth birthday, Thursday evening, January 21st, at the Bellevue-Stratford Hotel. Many distinguished men, prominent not only in medicine but in military, diplomatic, educational, political and religious circles, will be present to participate in this tribute to Dr. Keen, the dean of American surgeons. A bronze bust of Dr. Keen, modelled for the occasion by a noted sculptor, will be presented on behalf of those participating.

Sheepskin Coats for Tuberculosis Patients.—The United States Public Health Service has purchased 2500 sheepskin lined coats for use in its tuberculosis hospitals. Clothed in these wind proof coats, which extend to the ankles, ex-service men are expected to enjoy the sunshiny winter days while taking the cure in their reclining chairs during the rest hours at Uncle Sam's various sanatoriums. A sufficient number of these coats have been sent to all the sanatoriums, both in the arid southwest and in the Asheville sector, as well as others throughout the country. Even those in southern California have not been neglected, as the days are sometimes chilly there.

Suicides Follow Famine in China.—According to cable dispatches from Peking, starvation, suicide and murder are beginning to take their toll from China's famine sufferers. Efforts are being made to aid the unfortunates, but the workers are handicapped by lack of funds and an insufficient number of relief workers, so they can save but a small proportion of the millions who are doomed to die. The distress in China is well illustrated by the fact that at the French Hospital at Chengting-su, a handful of nuns are sheltering 2,056 aged famine victims in a space normally used by fifty. The nuns are aided by the strongest of their charges in building shacks for the fast rising tide of famine sufferers.

Report of Jewish Hospital, Brooklyn.—The annual report of the Jewish Hospital of Brooklyn for the fiscal year ending October 31, 1920, shows an increase in the number of patients treated in the hospital over the previous year. In 1919, 5,928 patients were treated and in this report 6,005 patients are listed, with an average of 232 patients a day and 85,156 days of treatment. The ambulance responded to 1,419 police calls. In the dispensary the number of patients dropped from 40,058 in 1918, to 34,751 for this year, largely due to the discontinuance of the orthopedic clinic.

Prohibition Gets Credit for Decrease in Insanity.—According to Dr. Horatio M. Pollock, chief statistician of the State Hospital Commission, since the advent of prohibition there has been a considerable decrease in the number of persons committed to State Hospitals for the Insane. Data gathered by Dr. Pollock show that a considerable percentage of the number of insanity cases in the state were caused by the excessive use of alcohol. In 1909, for instance, 10.8 per cent. of the persons committed that year had become insane from alcoholism; this year the percentage of insanity cases caused by alcohol was only 1.9.

Kings County Medical Society.—At the annual meeting of this society, held Tuesday evening, December 21st, the following officers were elected:

President, Dr. Arthur H. Bogart; vice-president, Dr. Frank D. Jennings; secretary, Dr. Lewis H. Addoms; associate secretary, Dr. Thomas M. Brennan; treasurer, Dr. Robert L. Moorhead; associate treasurer, Dr. Alfred Bell; directing librarian, Dr. William Browning; trustee, Dr. William Linder; censors, Dr. John G. Williams, Dr. O. Paul Humpstone, Dr. Robert Barber, Dr. H. T. Langworthy, Dr. William H. Bayles.

The following were elected delegates to the State convention: Dr. Russel S. Fowler, Dr. Charles E. Schofield, Dr. William F. Campbell, Dr. S. J. McNamara, Dr. William Linder, Dr. Edwin A. Griffin, Dr. Arthur H. Bogart, Dr. John J. Sheehy, Dr. Elias H. Bartley, Dr. Walter D. Ludlum, Dr. Robert E. Coughlin, Dr. Calvin F. Barber, Dr. Roger Durham.

Medical Unit for Eastern and Central Europe.—Dr. Harry Plotz, medical adviser of the Jewish Joint Distribution Committee, will sail Wednesday for Europe to direct an overseas medical unit of twenty American specialists, sanitarians, dentists and pharmacists. The unit will serve for one year in the war stricken countries of Eastern and Central Europe, and will sail about January 15th. The unit will furnish medical supplies and surgical instruments to local doctors and hospitals, who now lack everything and as a result are helpless to combat the diseases sweeping the countries. It will also cooperate with the Governments in fighting epidemics, principally typhus; conduct educational health campaigns, build baths and furnish soap and fuel for them, and organize boards of health in each community so that the work of the unit will go on after it leaves Europe. This is the third American Jewish Relief unit sent to Eastern Europe within a year by the committee. An appropriation of $2,000,000 for the unit's work has been made.

Recurrence of Influenza Epidemic Uncertain.—Surgeon General Hugh S. Cumming, of the United States Public Health Service, says that while it cannot be definitely foretold whether there will be another epidemic of influenza this winter, it is his belief that even should it become prevalent here and there it would not assume the epidemic proportions of the past two years, nor would it rage in such severe form. As a result of careful analyses of the epidemiology of influenza it may be stated that an attack of influenza appears to confer a definite immunity to subsequent attacks, lasting for several years.

Meetings of Local Medical Societies.—The following medical societies will meet in New York during the coming week:

MONDAY, *January 3rd*.—Clinical Society of the New York Polyclinic Medical School and Hospital.

TUESDAY, *January 4th*.—New York Academy of Medicine (Section in Dermatology and Syphilis); Medical Society of Harlem Hospital; New York Neurological Society; Society of Alumni of Lebanon Hospital.

WEDNESDAY, *January 5th*.—New York Academy of Medicine (Section in Historical Medicine); Bronx Medical Association; Harlem Medical Association; Psychiatrical Society of New York (annual); Society of Alumni of Bellevue Hospital; Brooklyn Society for Neurology.

THURSDAY, *January 6th*.—New York Academy of Medicine (stated meeting); Brooklyn Surgical Society (semi-annual meeting).

FRIDAY, *January 7th*.—New York Academy of Medicine (Section in Surgery); New York Microscopical Society; Practitioners' Society of New York; Alumni Association of Roosevelt Hospital; Gynecological Society of Brooklyn.

◆

Died.

BACKMAN.—In Philadelphia, Pa., on Monday, December 6th, Dr. Edward F. Backman, aged sixty years.

BOWLBY.—In Medical Lake, Wash., on Thursday, December 9th, Dr. F. E. Bowlby, aged fifty three years.

DOUGLAS.—In Concord, N. H., on Friday, December 17th, Dr. Orlando B. Douglas, aged eighty-four years.

FREEMAN.—In Philadelphia, Pa., on Monday, December 20th, Dr. Walter J. Freeman, aged sixty years.

HOLGATE.—In Los Angeles, Cal., on Wednesday, December 15th, Dr. Charles E. Holgate, aged forty-four years.

HELLENSTEIN.—In New York City, on Monday, December 20th, Dr. Herman Hellenstein, aged fifty-eight years.

HOLGATE.—In Los Angeles, Cal., on Tuesday, December 14th, Dr. Charles E. Holgate, aged forty-six years.

KERR.—In Steubenville, Ohio, on Saturday, December 11th, Dr. William B. Kerr, aged forty-three years.

LABENBERG.—In Richmond, Va., on Friday, December 17th, Dr. Charles A. Labenberg, aged forty-four years.

MARBLE.—In Worcester, Mass., on Thursday, December 9th, Dr. John O. Marble, aged eighty-one years.

MILLS.—In Missoula, Mont., on Sunday, December 5th, Dr. William P. Mills, aged sixty-three years.

MOREHOUSE.—In West Orange, N. J., on Monday, December 20th, Dr. James T. Morehouse, aged sixty-three years.

MINER.—In Ware, Mass., on Sunday, December 19th, Dr. Worthington W. Miner, aged seventy-three years.

SWIFT.—In New York City, on Monday, December 20th, Dr. William J. Swift, aged sixty-eight years.

RADEBAUGH.—In Pasadena, Cal., on Thursday, December 16th, Dr. John M. Radebaugh, aged sixty-nine years.

WILLIAMS.—In Hartford, Conn., on Tuesday, December 7th, Dr. May R. Williams, aged forty-six years.

YOUNG.—In San Francisco, Cal., on Tuesday, Nevember 16th, Dr. William S. S. Young.

Book Reviews

THE HEART AND ITS DISORDERS.

The Mechanism and Graphic Registration of the Heart Beat. By Thomas Lewis, M.D., F.R.S., F.R.C.P., D.Sc., Honorary Consulting Physician, Ministry of Pensions; Late Consulting Physician in Diseases of the Heart (Eastern Command); Physician of the Staff of the Royal Medical Research Committee, etc. Illustrated. New York: Paul B. Hoeber, 1920. Pp. xx-452.

Heart Troubles. Their Prevention and Relief. By Louis Faugères Bishop, M.A., M.D., Sc.D., F.A.C.P., Professor of the Heart and Circulatory Diseases, Fordham University; School of Medicine, New York City, President of the Good Samaritan Dispensary; Physician to the Lincoln Hospital, etc. Illustrated. New York and London: Funk & Wagnalls Company, 1920. Pp. xvi-422.

The Diagnosis and Treatment of Heart Disease. Practical Points for Students and Practitioners. By E. M. Brockbank, M.D. (Vict.), F.R.C.P. Hon. Physician, Royal Infirmary, Manchester, Lecturer in Clinical Medicine, Dean of Clinical Instruction, University of Manchester. Fourth Edition. Illustrated. New York: Paul B. Hoeber, Pp. viii-158.

It may seem strange to group these three books and discuss them in one review, but the practitioner who has the interests of his patients in mind will be grateful for any knowledge that will aid him in his work. It may be said in reference to some cardiac disorders that the more we know the less we understand. In a study of cardiac conditions we cannot be limited to physical signs and graphic formulæ. We have many other essential things to consider. What caused the lesion? Could it have been prevented? What can we do to help our patient? What can he do to help himself? How much real harm has been accomplished? How much work can the patient do? These and a host of equally important questions flock to us for answer.

* * *

Some nine years ago Lewis brought out a monograph called *The Mechanism of the Heart Beat.* This was used for the foundation of the present book, which is a larger and a much more comprehensive work. In it we find Lewis emphasizing his old but by no means unimportant warning, of how essential it is for the physician to use his senses in the diagnosis of the patient's condition. The patient and not the laboratory are to be the area of exploration in determining the extent of the injury. Wholesome warning and too frequently heeded. In his book he does not go into all the phases of cardiac disorders; only certain ones are dealt with, but these with the thoroughness which marks the works of Lewis.

Much new matter has been added to the original text in the first part of the book which deals with the anatomy and histology of the nodes and functional tissues. Here physiological principles are discussed and an explanation given for the normal pacemaker of the heart. We also have a presentation of electrocardiographic deflections, and their changes in regard to their effect on either of the ventricles. This is then followed by various hypotheses explaining the disorders of the mechanism of the heart as interpreted by the aid of the electrocardiograph. Much experimental material has been used and examined in conjunction with the clinical records. The correlation of cardiac disorders found in patients and those of experimental origin is convincing. In this way a new light is given to the cardiac arrhythmias. Various heart blocks are analyzed; those produced experimentally in animals and those encountered in the human. Evidence is submitted of the new rhythm centres, both the atrioventricular rhythm and the much discussed idioventricular rhythm.

Then step by step we have presented the various fibrillations, auricular and ventricular, with all their attendant variations, the heterogenic impulse, and the interrelation of extrasystole paroxysmal tachycardia and fibrillation, and socalled sinoauricular heart block. A subject of widespread interest, one that demands the attention of workers in every field in medicine is cardiac syncope and unexpected death. As Lewis states the condition has for its primary cause a hidden or unrecognized defect of the nervous system, while in other cases the cardiovascular system is at fault and here the syncope is caused by a lack of arterial blood in the brain tissue. These cerebral anemias are then discussed at some length. Considering the difficulty in securing definite evidence the situation is well worked out. Cases of clinical syncope are cited where the lesions were afterwards confirmed at autopsy. Standstill of the entire heart, of the ventricle, heart block and accelerated action are considered and carefully explained.

It may be worth while to quote from Lewis's introduction, for the following passages indicate what his general attitude is in regard to his own work:

> To advocate the general use of laboratory methods involving costly devices and time robbing technic is not my desire; it is to emphasize the vital importance of methods of precision in progressive studies of disease while it is to be freely acknowledged that simpler methods are essential to the practice of medicine, it is clearly right to insist that in compiling reports contributory to scientific medicine precise methods are desirable. It is from this viewpoint that the example of electrocardiography is to be stressed. Inexact method of observation, as I believe, is one flaw in clinical pathology today. Prematurity of conclusion another and in part follows from the first . . . Of the immediate value of graphic methods to practical medicine, it is my desire to speak but briefly. These records have placed the entire question of the human heart on a rational basis, so giving to the worker the confidence of knowledge; they have influenced prognosis and have rendered it more exact; they have potentially abolished the promiscuous administration of cardiac poisons, and have clearly shown the lines which therapy should follow. The new clinical observations have stimulated and directed a host of laboratory researches, anatomical, physiological, pathological and pharmacological of a valuable nature . . . The book was written originally in the hope that it might stimulate the study of heart affections by precise methods.

The author is not generally allowed to write his own review, even in part, but Lewis has so much to say that is important that in this case an exception is made. There is no other worker in the field of cardiac pathology to whom he can be compared. He stands alone in the portion of the field he has essayed to cover. His is the last word on the subject today.

Bishop has tried to kill many birds with one stone. By his own confession his book is intended for "those who are suffering from heart troubles or are interested in the subject. . . ." He wants to influence people to do those things for themselves that he lays out at the moment of the examination. He implies that the medical profession has kept facts from the laity and that many more suffer from cardiac disorders than there are aware of their disease. This may be true. The belief that has been maintained among other workers in this field is that more persons have been treated for socalled heart disease than have it.

In attempting to produce an appetizing morsel for the neurotic or the hypochondriac he immediately makes his book semiscientific, which makes it of little value to the physician. It is like a child's version of the *Arabian Nights Tales* with all the spice removed so they may be safely read by the young folks. Now what is the situation as far as the layman is concerned? He who has no heart lesion has no need for the teachings and warnings in the book. He who has need for the teachings will not be able to handle the problems as outlined in this book. There are many problems to be considered in addition to those set forth; problems which require all the skill and training of a medical man and of a specialist, as a rule.

Bishop, no doubt, is sincere when he presents his findings and he can see no reason why an ordinary reader cannot fully understand the things he has outlined in a fashion which to him seem quite clear. Yes, they seem simple to him because he has an extensive background of knowledge which he unconsciously assumes the reader also possesses. This is just what is meant by the adage that "A little knowledge is a dangerous thing." If he could supplement a medical course for the reader and a goodly amount of clinical experience then it might be well to give him the information—but even then, how many physicians with all this knowledge would trust themselves to treat their own cardiac disorders?

This is not written in the spirit of criticism on account of any danger there might be in the number of cardiac patients decreasing for the practitioner. Quite the contrary. Many readers of this book will undoubtedly come to a physician to have their troubled minds set at rest and be told that their hearts are doing all that Nature intended them to do. The public should be educated along medical lines, but Bishop's method of approach is far from satisfactory in its results.

* * *

Convenient and complete is the verdict of approval of this fourth edition of Brockbank's manual. It is simply what it purports to be, a pocket manual for clinical reference. In its modest way it completely fulfils the requirements. It contains the essence of many more voluminous books and for the student and even the practitioner it aids in recalling the elaborate discussions found in more complete textbooks. In spite of the limitations of size physical signs are grouped in a convenient fashion and none of the important ones omitted.

THE POOR RICH.

The Age of Innocence. By Edith Wharton. New York: D. Appleton and Company, 1920. Pp. 365.

The House of Lynch. By Leonard Merrick. With an Introduction by G. K. Chesterton. New York: E. P. Dutton & Company, 1920. Pp. 324.

To group these two books in one review may be considered unfair to Edith Wharton, but since both have invaded the homes of the few—the rich—as settings for their stories, have flung open the doors of the new and the old aristocracies, the aristocracies founded on wealth, they must be content when they find themselves in the same first class compartments. Both of these authors, in former books, found their characters among the more lowly, if the more real, people of life. Let us now consider where they have reached a common ground in their invasion of the palaces of wealth; let us see where they have diverged; let us weigh their errors and their successes.

In the case of Edith Wharton one is hardly aware that she has in the least strayed from her original surroundings. She enters the hushed drawing rooms in the town house, the doors of which are flung open for formal functions when the family name is at stake, or when there is danger of the breaking down of the formal barriers, and is quite at home. As she introduces us to one member of the family after another we have not the feeling of an invasion but we see the unfolding of characters, little souls in most instances, victims of environment and a lack of initiative. They accept the orders and keep themselves away from their real wishes in accordance with the unwritten laws governing their class. Their characters are drawn with painstaking care. Her work is like delicate Chinese art, with great detail for the minute markings and the same sophistication. She has shown the flimsy structure of high social life and how it shaped the course of the feeble characters caught in its meshes; how the bolder spirits were censored; how individuality gave way to form; how characters remained true to type and true to their early upbringing. She shows how the man in the story, we would call him hero but he might resent it, keeps away from the woman he really loves, marries a social inanimate doll, just because he has given his word. With great cleverness she reveals this apparently cold and sexless doll, the girl with the "almost boyish figure," as a subtle sphinx who, at the opportune moment, entangles him beyond all hope of recovery. She does this on various occasions without any sign of emotion, and it is only after her death that any inkling of it is revealed to her husband.

In Edith Wharton's *Ethan Frome* we see poverty keeping two lovers apart and sending them to a moral death mangled beyond recognition. They are kept as crippled prisoners for the rest of their lives under one roof within sight of each other. This is the story of two lovers and the third leg of the triangle a neurasthenic woman. Now she takes us to the rich and shows us how two lovers may be kept apart by wealth and spend a useless existence, repressing their emotions, and making inarticulate cries in a most absurd sign language.

In the case of *Ethan Frome* our sympathies are more readily enlisted, for the characters are helpless. The wife is dependent. . . . Here an adult semblance of a grown up point of view would save the day. A solution is not outside the realms of possibility. The situation is not hopeless, but the actors are too weak. In both instances the unloved women, the rich and the poor, made a desperate and successful effort to hold the man—the male. In both instances they sensed the danger in an unconscious way, but they struck their blows with the unfailing precision of the hungry female spider who feasts on her unsuspecting mate.

Many other points might be discussed in this work of art, for this it may be called with no apology. Wit and irony bring smiles and quicken the reader's pulse. She has shown us humans in a most artificial environment and has done it so well that the most critical can find no fault. She has balanced her story with great precision, never once leading us into remote bypaths. She has condensed her material, using no needless situations or words. The only feeble portion of the book is the epilogue, a glimpse of the newer generation with yet a glance at the past in retrospect where a more hopeful note is struck. Here we find a new code with new values based on achievement, not on family, on character not on wealth. Here she has attempted to quicken her cadence and bring things home by contrast. More convincing is the ending of the broken down family in *Ethan Frome,* in the tumble-down shack with its crippled inmates.

* * *

Now a few words for Merrick. His is as the work of a clumsy mason. He too had a moral to teach, but in his crude way he robbed his story of any value it might have. The simple minded heroine, poverty stricken, with only two servants, and finally refusing her father's ill gotten millions; the selfabnegation of hero and heroine; the broken hearted, hard hearted irate parent; much suffering, of the stage barnstorming variety; lofty arguments; silly chatter; famous painting; success; . . . a solution of the millionaire problem; the refusal of the filthy millions. Perhaps we have an echo of the book in real life where a Boston youth has refused his father's millions. Who knows. Perhaps we will have a solution of the problem of the centralization of wealth. Perhaps the book will prove of great social worth. Perhaps. But it might be well to suggest to Merrick that he rewrite his story with more care and make his characters and the situations more in keeping with reality.

THE GOLDEN BARQUE.

The Golden Barque and The Weaver's Grave. By Seumas O'Kelly. New York and London: G. Putnam's Sons, 1920. Pp. 253.

Mortimer Hehir, the weaver, was dead, and in search of his grave, bought and never used, came Meehaul Lynskey, the nailmaker, Cahir Bowes, the stone breaker, both his contemporaries, two young gravediggers, and his fourth wife, the other three being in the new graveyard.

The two old men, proud of being chosen for the search, stand in Cloon na Morav, the Meadow of the Dead. No path, no plan or map or register to guide them, the gravediggers patiently follow their search, spades ready. Confessing they have forgotten, the widow goes to ask the whereabouts of the grave from a bedridden ancient, one Malachi Roohan, who in his moribund condition clings to his theory that everything and everybody is a dream. He gives wrong directions as to the grave, but, suddenly, one of the old searchers remembers it. At the finish of the opening up, the handsomer of the gravediggers is smitten with love for the widow. She saw the figure of the man spring across the open black mouth of the weaver's grave. A faint sound escaped her, and then his breath was hot on her face, his mouth on her lips. Rather sudden, all this!

The descriptions of old age, old graves, old memories, are capital. It cannot be called a story, though O'Kelly crowns his senilities with a warm living kiss. The book should be read in a sunlighted, flower decked room, for the chill damps arising from Cloon na Morav get into one's bones.

* * * * * * * *

It was a relief to board the *Golden Barque* with its genial boss, Martin Coughlan, proud of his canal boat, content with his little world, interested in but not disturbed by the mutual hatred of his two hands, Calcutta and Hike. Billy, the clown, and The Terror, a boy of eleven, his devoted admirer, make a clever chapter and brace us for another of O'Kelly's senile decayments—the Derelict, with his grizzled, long lined face, wisps of shaggy hair and head that hung level between the drooping shoulders. A mean, greedy crime has shrivelled him up, and makes him live near the canal in a most deserted, rheumaticky, squashy, briargrown lane. It is a relief when the boat passes his roofless house, and the story of how Martin Coughlan went on a committee and made a speech, or thought he did, cheers the reader up and makes him ready to welcome O'Kelly's next volume.

MARIE CLAIRE'S WORKSHOP.

Marie Claire's Workshop. By Marguerite Audoux. Translated by F. S. Flint. New York: Thomas Seltzer, 1920. Pp. 239.

What of romance is to be had in the workroom of a Paris dressmaker? There is a smell of new stuffs and of human beings, the noise of a machine, some half dozen girls, pretty, droll, sentimental, moody; a gentle *patron* who always pretends to be angry, and his clever, patient wife, who thinks she is making a good living when the workgirls are making one too. Nothing charms her more than when Bergeounette, one lively worker, sings her droll little songs which cheer the whole room, and nothing alarms her more than the cold which is slowly killing little Sandrine. She sends her to her own doctor, who advises long rest and good food:

"Sandrine laughed with all her heart. 'Rest? Where the deuce does he think I'm going to get that? I don't know any shop where they sell it.'" So, not knowing, tuberculosis claims the girl, who, though not married, has a lover and two children, a fact which had excited no comment in the workroom, though Gabrielle, a new arrival, and pregnant, is subjected to much chaff, even from the *patron,* concerning her appearance. It is awkward, too, for girls to die and to have babies when the season is at its height, and the description of overtime working is just one of those little descriptions in which the author excels:

"Madame Linella must have her dress by ten on Sunday. 'Above all, make me sleeves which don't look like sleeves,' is the last demand from the imperious lady. 'The girls were all work worn,' said Marie Claire. 'I agreed to stay and help Madame Dalignac. The hours passed; a church clock counted them one by one, without forgetting the quarters and the half hours, and the sounds entered the open window as if their mission were to remind us that we had not a minute to lose. The twelve strokes of midnight echoed for so long that Mme. Dalignac went and shut the window, but the hours which followed did not tire. Now and then she was overcome by sleep. She let go of her needle suddenly and her head fell forward. . . . The church clock suddenly counted three. She put down her work and got up painfully to go and make tea. . . . I understood the day was breaking. Then I let my body huddle into rest and yielded unto the immense desire for a few minutes' sleep. . . . "Sleeves that don't look like sleeves." Madam worked an hour on them. . . . She gave way suddenly, and fell on her knees. I jumped up to help, but saw she was in a deep sleep. I slipped a roll of lining beneath her head, and, fearing I should go to sleep like her, I passed a damp cloth over my face. "Sleeves that don't look like sleeves." I looked at them for a long time, then undid them. . . . Six o'clock struck. The sun, passing over the new house opposite, sought to frame itself in a window pane, and blinded me. My eyelids closed, and for a moment sleep crushed me. Then a sort of numbness seized me. It seemed to me that a great hole was forming in my chest, and there was nothing left in me but the fixed idea that the dress must be delivered at all costs before ten o'clock.' "

The scene in detail, the two feverish women trying to keep awake, the smell of the dying lamp mingling with the stuffiness of the room, are fine portrayals of sordidness, of utter weariness. It is the same in her description of the Luxembourg on a winter morning. She even finds something interesting in the postures of the iron chairs put aside till the spring, and sprawling in grotesque attitudes.

When Marie Claire takes the old sewing woman, Herminie, down to Burgundy to give the old soul a look at her native village, we share the excitement and strain to catch first glimpse of the so white, dusty roads, the vineyards, the fruit trees, but time has changed all things remorselessly, save the sunset and the roads. You get right into the hot, hushed air of a summer evening in the vine districts, you see the full moon rising and drawing from the earth light mists, and hear the hundred voices of insects among the dusty roadside weeds, and the frogs in the half dried ponds. The end of a long day of trying to restore old scenes has wearied old Herminie sorely. "Seated on the crumbling stones, her hands hanging limply, and her head flung back, she was uttering a long and monotonous cry. 'Let us be off!' she cried, and dragged me toward the station."

The small tragedies of seamstress life are drawn with a blunt pencil; there is no time to stay work when Gabrielle is run over and her unborn infant killed, though all agree the fall had solved a difficult question. The engagement of Marie Claire to Clément, the patron's nephew, lightens the gloom which lowers when a neglected illness takes the patron also. The author has a rare fashion of making things animate and inanimate give a replica or express the idea of that which is happening in the human lives. The patron and his good wife are facing evil times: the shadow of death and debt is falling. One day a little mouse appears; the cat is fetched. The capture, the torturing play, the defiance of the tiny creature with its bleeding jaws, are an echo of the patron and his wife defying the shadows. The cat and mouse struggle accentuate, create a sympathetic realization of the human crisis.

It is an enticing little story, and the reader needed no bookmark, for the end was reached before the volume was put down.

THE AMERICAN REVIEW OF TUBERCULOSIS.

In the issue of the NEW YORK MEDICAL JOURNAL of December 4th, the reviewer had occasion to speak of the *Zeitschrift für Tuberkulose,* now edited by Professors Kirchner, Kraus, V. Leube, Orth, Penzoldt, Kuttner, and Lydia Rabinowitsch. This was in reference to the first number sent for review since the declaration of the war. The *Zeitschrift* had its beginning in 1900 under the editorship of C. Gerhardt, Frankel, and E. von Leyden. All three of these men have since gone to the great beyond. In the year 1916, American tuberculosis workers felt the need of a scientific publication similar to the German *Zeitschrift* which then arrived very irregularly in this country owing to war conditions. Today it is the reviewer's privilege to speak of this home product, which is in every way equal, if not superior, to this veteran German journal on tuberculosis science.

The *American Review of Tuberculosis* was started in 1916 with Edward R. Baldwin, of Saranac Lake, as editor in chief, and Allen K. Krause, of Johns Hopkins Hospital, Baltimore, as editor. Lawrason Brown, H. R. M. Landis, Paul A. Lewis, M. J. Rosenau, Henry Sewall, and Borden S. Veeder have since been added to the editorial staff; George Mannheimer is abstract editor. Before us is the November number of 1920. The mere mention of some of the contributions to this number will give an idea of the character of the publication: First Infection with Tuberculosis by Way of the Lungs, by Eugene L. Opie and Hans Andersen; A Röntgenological Study of Influenza, with Recovery, in an Advanced Case of Pulmonary Tuberculosis, by Louisa T. Black and Mary Moore; Masked Juvenile Tuberculosis, by J. V. Cooke and T. C. Hempelmann; A Comparison of Gross Tuberculous Lesions in Whites and Negroes, As Based on 150 Autopsies, by J. B. Rogers; Experimental Lesions of the Lungs Produced by the Inhalation of Fluids from the Nose and Throat, by W. V. Mullin and C. T. Ryder; Environmental Factors in Tuberculosis, by Allen K. Krause. It is obviously impossible to review all of these articles in the limited space which can be given to it in an important medical journal, and every one of them has distinct scientific merit. The reviewer has been a subscriber to this periodical from its very beginning, and may conscientiously state that it has constantly grown in excellence.

To quote again from the contents of two more of this year's issues will give a further idea of the scope of the *Review*. In the February number, S. Adolphus Knopf pays a tribute to the great William Osler, an honorary vice-president of the National Tuberculosis Association, and gives a list of the great physician's contributions relating to tuberculosis. There is a highly interesting article on Observations on the Artificial Tuberculous Infection of Guinea Pigs through the Respiratory Route, by J. B. Rogers; also on Pulmonary Syphilis, by Elmer H. Funk. We may also mention An Unusual Case of Pulmonary Tuberculosis—Terminating in Spontaneous Hemopneumothorax Following Artificial Pneumothorax, by Fred H. Heise and Allen K. Krause.

In the September number Horace J. Howe and William E. Lawson write on The Influence of Smallpox and Vaccination on Pulmonary Tuberculosis; James Alexander Miller gives us Some Problems in the Differential Diagnosis of Pulmonary Tuberculosis; Francis B. Trudeau presents The Importance of Physical Signs in the Prognosis of Pulmonary Tuberculosis; B. Suyenaga, An Investigation of the Acid Fastness of Tubercle Bacilli, II; Selig Simon, Artificial Heliotherapy in Pulmonary Tuberculosis; Louis C. Boisliniere, Influenza as a Factor in the Activation of Latent Tuberculosis; Ethan E. Gray, The Surgeon and the Consumptive; S. W. Schaeffer, Silence in the Treatment of Pulmonary Tuberculosis.

Every number contains abstracts and articles on tuberculosis and allied subjects from all the leading medical journals of the world; many articles are handsomely illustrated by original drawings or radiographic pictures. The *Review* is issued monthly, appearing about the twentieth of the month. A volume includes twelve numbers and begins with the March number. The subscription price to members of the National Tuberculosis Association is $2 a volume, with twenty-five cents additional for Canada and fifty cents additional for other foreign postage; and $5 a volume to nonmembers, foreign postage included. Subscriptions may be sent to Williams & Wilkins Company, Mount Royal and Guilford Avenues, Baltimore, Md., or to the National Tuberculosis Association, 381 Fourth Avenue, New York City.

The *American Review of Tuberculosis* is not only indispensable to the specialist and student in tuberculosis, but equally so to the general practitioner who must keep informed on these subjects if he desires to do his duty to his tuberculous patients and to himself.

New Publications Received.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

ONE HUNDRED PER CENT. The Story of a Patriot. By UPTON SINCLAIR. Pasadena: Published by the Author, 1920. Pp. 329.

THREE PLAYS. By BRIEUX, Member of the French Academy. With Preface by BERNARD SHAW. New York: Brentano's, 1920. Pp. liv-333.

CONTEMPORARY RUSSIAN NOVELISTS. Translated from the French of SERGE PERSHY by FREDERICK EISEMANN. Boston: John W. Luce and Company, 1913. Pp. 317.

PHILOSOPHIC NIGHTS IN PARIS. By REMY DE GOURMONT. Being Selections from Promenades Philosophique. Translated by Isaac Goldberg. Boston: John W. Luce and Company, 1920. Pp. 193.

OLD AT FORTY OR YOUNG AT SIXTY. Simplifying the Science of Growing Old. By ROBERT S. CARROLL, M.D., Medical Director, Highland Hospital, Asheville, North Carolina. New York: The Macmillan Company, 1920. Pp. 147.

PSYCHOPATHOLOGY. By EDWARD J. KEMPF, M.D., Clinical Psychiatrist to St. Elizabeth's Hospital (Formerly Government Hospital for the Insane), Washington, D. C.; Author of The Autonomic Functions and the Personality. Eighty-seven Illustrations. St. Louis: C. V. Mosby Company, 1920. Pp. xxiii-762.

TYPES OF MENTAL DEFECTIVES. By MARTIN W. BARR, M.D., Chief Physician, Pennsylvania Training School for Feebleminded Children, Elwyn, Pa., and E. F. MALONEY, A.B., Professor of English, Girard College. With 31 Plates Containing 188 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. ix-175.

THE COMMUNITY HEALTH PROBLEM. By ATHEL CAMPBELL BURNHAM, M.D., Health Service, Atlantic Division, American Red Cross; Attending Surgeon, Volunteer Hospital, New York City; Lieutenant Colonel, Medical Reserve Corps, U. S. Army etc. New York: The Macmillan Company, 1920. Pp. 149.

TEXTBOOK OF NERVOUS DISEASES. For the Use of Students and Practitioners of Medicine. By CHARLES L. DANA, A.M., M.D., LL.D., Professor of Nervous Diseases in Cornell University Medical College; Consulting Physician to Bellevue Hospital; Neurologist to the Montefiore Hospital, etc. Ninth Edition. With 262 Illustrations, Including 4 Plates in Black and Colors. New York: William Wood and Company, 1920. Pp. x-655.

THE RADIOGRAPHY OF THE CHEST. Vol. I. PULMONARY TUBERCULOSIS. With Nine Line Diagrams and Ninety-nine Radiograms. By WALKER OVEREND, M.A., M.D. (Oxon), B.Sc. (Lond.) Hon. Radiologist and Physician to the Electrotherapeutic Department, East Sussex Hospital (Hastings); Radiologist to the City of London Hospital for Diseases of the Chest (during the war) etc. St. Louis: C. V. Mosby Company, 1920. Pp. 119.

HYGIENE AND COMMUNICABLE DISEASES. A Handbook for Sanitarians, Medical Officers of the Army and Navy and General Practitioners. By FRANCIS M. MUNSON, M.D., Lieutenant, Medical Corps, U. S. N., Retired; Lecturer on Hygiene and Instructor in Military Surgery, School of Medicine, Georgetown University; Formerly Instructor in Medical Zoology, Georgetown College, etc. Illustrated. New York: Paul B. Hoeber, 1920. Pp. xiv-793.

THE COURSE OF OPERATIVE SURGERY. A Handbook for Practitioners and Students. By Prof. Dr. VICTOR SCHMIEDEN, Lately Assistant in the Royal Surgical Clinic in the University of Berlin; Professor of Surgery in the University of Halle, and ARTHUR TURNBULL, M. B., Ch.B. (Glasg.) Lately Demonstrator of Anatomy in the University of Glasgow. With a Foreword by Prof. Dr. A. BIER. Second Enlarged English Edition. New York: William Wood and Company, 1920. Pp. xx-349.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Cholecystgastrostomy. — Charles S. White (*Surgery, Gynecology and Obstetrics,* November, 1920) states that the operation of cholecystgastrostomy has a definite place in surgery and the following may be concluded in regard to the operation: 1. The operation is indicated in an irremediable obstruction of the common duct or division of the duct which cannot be successfully sutured. 2. For long continued drainage in infective biliary cirrhosis it is superior to cholecystostomy in that nutrition is maintained. 3. It is not a difficult operation, being easier and safer to perform than an anastomosis between the gallbladder and the small or large intestine. 4. There is no danger of an ascending infection. 5. The presence of bile in the stomach, while unphysiological in a degree, is consistent with good digestion, and offers no argument against the operation. 6. The suture method of anastomosis is the only one to be employed.

Perforation of the Cecum.—Edward H. Risley (*Boston Medical and Surgical Journal,* June 10, 1920) reports a case in which the special points of interest were: 1. The finding of a recently given turpentine enema free in the abdominal cavity, its entrance being through a perforation in the cecum where a completely gangrenous appendix had been sloughed off. The question may, of course, be raised as to whether or not the turpentine enema did not actually produce the perforation, or at least hasten it by several hours. 2. Recovery from general peritonitis and three secondary hemorrhages occurring as late as the eighth, seventeenth, and twenty-first days after operation. 3. Later finding of "virgin" peritoneum with no adhesions even after so severe a peritonitis. 4. Unusually late, overwhelming, but short toxic erythema with sudden onset and equally sudden recovery.

The Treatment of Chronic Gastritis.—George M. Niles (*Charlotte Medical Journal,* August, 1920) divides the treatment into prophylactic, hygienic, local, dietetic, medicinal, and mineral water. Under the head of prophylactic treatment, all contributing or aggravating causes should be corrected. Deliberate eating, adequate mastication, and thorough insalivation should be insisted upon, also the treatment of pyorrhea, if it is present. It is well to rest both before and after meals. Locally, excessive mucus should be removed and the gastric mucosa soothed. Hot water and alkaline medicines help. Lavage is indicated in the presence of excessive mucus, which envelops the food and prevents its saturation by the gastric juices. Lavage should not be performed oftener than once a day, and the stomach should be free of food. It is well to use plain water at first; later, potassium permanganate, one grain to the pint; sodium bicarbonate, sodium chloride, silver nitrate (five grains to the pint; calcined magnesia, or boric acid. Where marked atony is present electricity should be employed. A diet rich in carbohydrate with a minimum of proteid is desirable. For hyperacidity, alkalies should be used; in subacidity or achylia, dilute hydrochloric acid, six to ten drops, may be given after meals. This can be administered either alone or in combination with pepsin or nux vomica. Before meals quassia, condurango or cinchona may be given. Mineral waters are used to stimulate secretion.

Multiple Resections of the Small Intestine.—Ernest L. Hunt (*Boston Medical and Surgical Journal,* September 2, 1920) says that in cases of severe traumatism to the intestine multiple resections are possible and to be utilized where a single resection would deprive the patient of an undue amount of bowel. In such cases, where the paralytic ileus has begun or its supervention is to be clearly anticipated, primary enterostomy proximal to the traumatized area is theoretically indicated. In cases of postoperative ileus enterostomy should not be too long deferred. Its proved value entitles the patient to its benefits without waste of time on less efficient measures.

Interperitoneal Adhesions. — R. J. Behan (*American Journal of the Medical Sciences,* September, 1920) discusses the results of his experimental investigations concerning interperitoneal adhesions, and advocates the application of a five per cent. mixture of boric acid with lanolin to the peritoneal surfaces, which he has found to give much relief from pain and to tend to prevent adhesions, although it does not do the latter with certainty. The lanolin must be as pure as possible. Most of that on the market is contaminated in various ways. It should also be sterilized three times on three different days, each time for half an hour at a temperature of over 212°. Before being used it should be heated so that it is absolutely fluid, and should be applied very hot to the peritoneal surface. The bowel should be dry before its application. It does not act in the presence of inflammation.

Treatment of Cancer of the Rectum.—Charles J. Drueck (*American Journal of Surgery,* August, 1920) in giving the treatment of cancer of the rectum formulates the following in regard to the technic of the operation which must be strictly adhered to if satisfactory results are to be obtained: 1. That an abdominal anus is necessary. 2. That the whole pelvic colon, with the exception of the part from which the colostomy is made, must be removed because its blood supply is contained in the zone of upward spread. 3. That the whole of the pelvic mesocolon below the point where it crosses the common iliac artery, together with a strip of peritoneum at least an inch wide on either side of it, must be cleared away. 4. That the group of lymph nodes situated over the bifurcation of the common iliac artery are in all instances to be removed. 5. That the peritoneal portion of the operation should be carried out as widely as possible so that the lateral and downward zones of spread may be effectively extirpated.

The Mental Factor in the Chronic Intestinal Invalid.—John Bryant (*Boston Medical and Surgical Journal,* February 26, 1920) reports two cases which illustrate two distinct types of mental commotion which are often encountered in the treatment of the chronic intestinal invalid. In one the mental commotion was due to a summation of general causes; in the other it was due to two specific factors; in both the relief of the mental commotion proved to be a very important factor in the recovery of the patient.

Early Radioscopic Signs of Pyloric Stenosis.—De Keating-Hart (*Presse médicale,* April 10, 1920) describes two signs which have already enabled him in a number of instances to detect pyloric stenosis before clinical or x ray findings had revealed its presence. The first sign is a particular change of shape in the gastric shadow whereby the latter assumes the appearance of a German pipe. The other sign is an interrupted, rhythmical displacement of the upper surface of the fluid contained in the stomach. This displacement is synchronous with the respiratory movements but is of greater amplitude, indicating a pronounced effort on the part of the organ to empty itself. The first of these manifestations is only a probable sign of pyloric stenosis, but the second is a certain sign of it.

The Tongue: Its Indication for Treatment of Disease.—M. W. Thewlis (*Medical Review of Reviews,* June, 1920) says that a study of the tongue will give many valuable suggestions for treatment of disease; it is often disregarded, especially by young practitioners. A red, clean tongue is an indication for an acid mixture; red tongue with prominent papillæ is an indication for the use of small doses of arsenic. Acids will relieve an acid stomach and alkalies will relieve an alkaline condition. Coated tongue is an indication for mercury and a saline laxative; if stools are light in color, mercury is indicated; if dark, podophyllin is needed. A moist tongue which becomes dry under alcoholic stimulation denotes that the latter is doing harm. The tongue is often dry in the aged.

Acute Infectious Enteritis with a Polyneuritic Syndrome.—Frederic J. Farnell and Arthur H. Harrington (*American Journal of the Medical Sciences,* July, 1920) report fifteen cases of this nature. To sum up this report, it would appear that there was introduced into the body an exogenous toxin (staphylococcus infection); that it was introduced into the gastrointestinal system and there produced an acute infective gastroenteritis; that there was a transmission of the infective agent from the intestinal tract to the general circulation, producing a septicemia, staphylococcus in type; that for reasons not yet explained this particular infection had a selective action upon the peripheral nervous system and caused the symptom-complex known as peripheral polyneuritis; clinicopathologically the milk, throat cultures, blood, fecal examinations, and urinary tests for bacteria showed in general the staphylococcus; pathologically there was observed an acute hemorrhagic gastroenteritis, multiple focal necroses of infectious origin in the liver, and acute hemorrhagic neuritis with hemorrhages between the nerve bundles.

Botulism from Canned Ripe Olives.—Herbert W. Emerson and George W. Collins (*Journal of Laboratory and Clinical Medicine,* June, 1920) state that five small outbreaks of botulism have occurred in the last six months, caused by eating ripe olives packed in glass containers. Four of the outbreaks were due to Bacillus botulinus of the Boise type, or Type A. Antitoxin for one type is specific for that type alone. As a preventive measure against the occurrence of further outbreaks of botulism, the authors recommend the advisability of government supervision over the plants, which supervision should also include the packing and canning plants.

The Saliva in Diabetics.—F. Rathery and L. Binet (*Presse médicale,* May 1, 1920) state that the saliva of diabetics presents certain special features, being scanty, often viscid, rather frequently acid in reaction, and in some instances containing notable amounts of glucose. They were able to show experimentally that in animals in which the blood sugar has been increased either by intravenous injection of glucose or by complete pancreatectomy elimination of sugar through the salivary glands takes place. There occurs clinically a condition that may be termed glycosialorrhea. This condition may accompany glycosuria, alternate with it, or occur independently without the appearance of any sugar in the urine.

Experiments on the Utilization of the Calcium of Carrots by Man.—Mary Swartz Rose (*Journal of Biological Chemistry,* March, 1920) carried out feeding experiments on four healthy young women to determine the utilization of the calcium of carrots. In all cases the calcium intake was near the estimated minimum for equilibrium. Three of the subjects showed a positive calcium balance, and in the fourth case the loss was small. When the carrots supplied about fifty-five per cent. of the calcium one of the subjects had about the same retention as when she was on a diet in which seventy per cent. of the calcium was derived from milk. Thus it is apparently possible to meet the requirement of the adult human for calcium largely, if not wholly, from carrots.

Antiscorbutic Properties of Raw Beef.—R. Adams Dutcher, Edith M. Pierson, and Alice Biester (*Journal of Biological Chemistry,* 1920) fed guineapigs on a diet of oats, water, and an amount of milk sufficient to improve the diet but insufficient to prevent scurvy (twenty-five c. c. of autoclaved milk, or twenty c. c. of pasteurized milk). Scurvy developed and the animals died. To this diet were added water extracts of raw lean beef, representing five, ten, fifteen, and twenty gm. of raw beef. However, this had no effect on the time of onset of scurvy or in the length of life of the experimental animals. On the addition of orange juice to the basal diet scurvy was prevented, both in the presence or absence of meat extract. The conclusion is drawn that the excellent condition of the animals on the orange juice and beef extract diet shows conclusively that the poor condition of the animals on the beef extract diet was due to the absence of the antiscorbutic vitamine rather than to any deleterious properties of the beef.

Observations upon Various Types of Diabetics under the Present Method of Treatment.—F. Gorham Brigham (*Boston Medical and Surgical Journal,* August 5, 1920) presents the following conclusions based on a study of a large number of diabetics over a period of ten years: 1. That by all the modern methods of low calory diet the diabetic patients do better than by former methods. 2. That without careful blood estimations diabetics cannot be satisfactorily treated and good results obtained. 3. That the complications of diabetes will develop even though the urine contains no sugar if the blood figures remain high. 4. That the prevention of obesity will reduce the number of diabetics tremendously. 5. That the study of other functions, such as the kidney function, and the removal of all possible foci of infection, are essential to having the diabetic patient do well. 6. That routine twenty-four hour urines must be more frequently done, or routinely done, to be able to recognize diabetes as well as other kidney conditions early, and allow earlier treatment. 7. That the disease diabetes illustrates the importance of laboratories where simple routine analyses can be done at a reasonable figure.

The Islands of Langerhans in Diabetes.—Moses Baron (*Surgery, Gynecology, and Obstetrics,* November, 1920) concludes that:

1. Pancreatic lithiasis is a rare disease, which occurs mostly in males during the fourth decade.

2. The obstruction of the pancreatic duct leads to an advanced atrophy of the pancreas accompanied more or less by fibrosis. The islets may remain intact even when the acini disappear completely.

3. The islets as epithelial structures which are entirely independent of the acini and have no relation to or communication with the ducts.

4. Changes in the islets—such as degeneration, necrosis and fibrosis—generally occur late in the disease, probably as a result of a superimposed secondary infection, consequent to a prolonged stasis in the ducts.

5. In complete accord with the results obtained experimentally in animals, occlusion of the ducts by calculi in man does not result in diabetes mellitus unless there be actual injury to the islets.

6. Cases of pancreatic lithiasis presenting symptoms of hyperglycemia and glycosuria reveal definite lesions of the islets at autopsy.

7. The study made bears out the conclusions that the islets secrete a hormone directly into the lymph or blood streams (internal secretion), which has a controlling power over carbohydrate metabolism.

8. Attempts at regeneration of injured pancreatic tissue manifest themselves in a definite hyperplasia of the ducts.

9. The principal clinical findings in cases of pancreatic lithiasis are coliclike epigastric pains often associated with temporary glycosuria, steatorrhea, alimentary glycosuria, incomplete digestion of meat fibres as revealed by the persistence of the nuclei in muscle fibres in the feces, and, occasionally, the presence of whitish or grayish pancreatic stones in the feces; the late stages are often accompanied by diabetes mellitus.

10. Operations on the pancreatic duct are often successful. The danger of fat necrosis as a result of the escape of fluid appears to be negligible.

11. The histopathology of the islets in diabetes falls into three main types, which are, in the order of their importance, as follows: fibrosis, hyaline degeneration, and arteriosclerotic changes. The pathogenesis of these lesions may not be very dissimilar to that of nephritis when taken in the broad sense. The differences in the intensity of the pathological changes in the kidney as compared with those in the pancreas may be explained by the marked differences in the characters of the two organs. In the kidneys, any glomerulitis or other changes in the glomeruli are followed or accompanied by alterations in the tubules; no such changes affect the tubules or acini in the pancreas, since the islets are entirely distinct from the latter structures.

Blood and Urine in Pancreatic Disease.—Cammidge and others (*Lancet,* August 21, 1920) establish a relationship between the amount of dextrin in urine and blood (which they name the difference value), and the state of the pancreas. The authors describe a method for measuring this difference value. They find, 1, that the proportion of dextrin in the blood varies directly with that in the urine; 2, that the proportion of amylolytic ferment in the blood and urine varies inversely as the difference value and directly as the percentage of sugar present, and, 3, that both are dependent on the sugar present. Control experiments on depancreated animals indicate that an increase in the difference value of the blood is a prediabetic condition.

1. When the gland is partly or wholly removed or functionally impaired, the sugar content and the difference value of the blood and urine rise.

2. The substance on which the difference value depends is derived from the glycogen of the liver.

3. An amylolytic ferment which acts on the glycogen is released from the liver into the blood or urine.

4. In the normal state the pancreatic secretions and the ferment of the liver maintain a balance which is disturbed in disease, resulting in abnormal conditions.

5. When pancreatic activity is decreased the dextrin content first and then the sugar content is increased and a prediabetic condition occurs, followed by hyperglycemia and glycosuria.

A Case of Paget's Disease Following a Trauma.—Dr. Stefano Gatti (*Archivio generale di neurologia e psichiatria,* March, 1920) describes in full the history and clinical symptoms of a case of Paget's disease in which radiology confirms his diagnosis and helps to exclude other diagnostic possibilities. It also shows very clearly the structural peculiarities of the osteitic process, in this case downward toward the knee joint and upward as far as the sacroiliac articulation. The patient's ascendents had shown in their history tuberculosis and scrofula on the father's side, general paresis in the mother, with cardiovascular difficulties on both sides. The patient showed no syphilitic signs. It is believed that the trauma he sustained, a fall upon the ice, acted through a lesion of the sympathetic upon a constitution predisposed to trophic alterations of a pluriglandular nature. To the general hormonic disequilibrium the trauma added dynamic vasomotor factors causing a special perversion of the dystrophy manifested especially in the osteitis.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Park, Ill., May 31, June 1 and 2, 1920.

The President, Dr. Thomas S. Southworth, of New York, in the Chair.

(Continued from page 1052, Vol. cxii.)

Paralysis of the Respiratory Muscles.—Dr. W. McKim Marriott, of St. Louis, said the chief interest in this case was in the treatment applied. The patient was a girl ten years of age who had suffered from a severe attack of diphtheria six weeks previously. Paralysis developed of the palate, ocular muscles, legs, back and neck muscles, and partial paralysis of the arms. Ultimately the diaphragm became involved, so that it failed to move at all during inspiration. The thoracic respirations were at first very active, later the intercostal muscles began to lose their power and the child became cyanotic and semicomatose. The child was obviously dying from suffocation, and it was thought that if the respirations could be maintained for a sufficient period of time to allow for restoration of function of the respiratory muscles that recovery would be possible. Artificial respiration was given by means of the Erlanger-Gessel air current, interrupter connected with a nitrous oxide mask. The child failed to cooperate at first, but later it was possible to get her to open the glottis at the right time so that air could be forced into the lungs at the regular rate. The effect was immediate. The cyanosis was relieved and after a period of about ten minutes of artificial respiration the child fell asleep and the mask was removed. Cyanosis slowly developed and was again relieved by a period of artificial respiration. This was kept up more or less continuously for five days, at the end of which time the function of the respiratory muscles began to return and the child was able to breathe without the aid of the apparatus. She made a complete recovery and is now in perfectly good health.

A Case of Cardiospasm. — Dr. Godfrey R. Pisek, of New York, said that the occurrence of cardiospasm in early life was still so rare as to make it justifiable to report this case. Since adult cases might trace their inception to early life or to congenital defects, the pediatrist might well consider these cases worthy of study. Neurotic or primary cardiospasm was attributed by some authorities to a contraction of the left crura of the diaphragm, by others to defective innervation, or to localized atony of the esophagus.

The case reported was that of a girl, twelve years of age, who first came under observation in September, 1919. The family and past history were negative. When three or four years old the child exhibited a strong will and was said to be "temperamental." This trait grew stronger as she grew older; otherwise she was an outdoor athletic child. She had a peculiar appetite, disliking vegetables, eggs, and sweets. About a month before coming under observation she complained that food choked her and at night she had a similar difficulty, complaining of a strangling sensation. A cough developed in connection with the night spasms, unconscious as far as the patient was concerned, and upon which codeine had no effect. Physical examination revealed nothing abnormal except some retraction of the supraclavicular and infraclavicular spaces, a slight tremor of the upper eyelids, a tendency to relaxation of the spine and bowing of the shoulders, and evidence of orthostatic albuminuria. Radiographic and fluoroscopic examination confirmed the diagnosis of cardiospasm. After an esophagoscopy under general anesthesia a moderate dilatation was done, but no anatomical basis was demonstrable. Bougies were passed at about fortnightly intervals until her departure for Florida in March of this year. In the South she did well at first, but she contracted malaria, lost weight, going down rapidly to eighty pounds, twenty pounds below normal, and the original symptoms of her cardiospasm returned. She was brought North and carefully examined again. The gastric contents showed retention, and the fluoroscopic examination a considerable dilatation of the esophagus with a smooth fusiform constriction at the cardiac end. Bougies were passed every fourth day. She was given atropine and a measured diet of 3,000 to 3,500 calories a day, and she gained fifteen pounds in twenty-nine days. Whether it would be necessary to pass a duodenal tube and give the stomach a complete rest for a time was still a question. This case showed that it was not so easy to treat this condition as one was led to suppose by the literature.

Congenital Atresia of the Esophagus.—Dr Henry L. K. Shaw, of Albany, said he reported this case for the purpose of emphasizing the historical side more than the clinical. The child gave a history of food coming out of its nose, and on attempting to pass the stomach tube it went down only a short distance. After giving barium the x ray showed the esophagus filling, but the barium did not pass through to the stomach. Examination of the lungs showed them filled with fine râles. The child died and at autopsy it was found that the upper third of the esophagus ended in a cul-de-sac and had no relation to the lower part which opened into the trachea. A similar case was reported in 1682 and another in 1703 by a Dr. Gibson, physician general to the British Army and a grandson of Oliver Cromwell. Dr. Shaw read this description, which was so accurate that it would be difficult to improve upon it today.

Primary Sarcoma of the Thymus.—Dr. L. Emmett Holt, of New York, said this patient was a child, six months old, with symptoms dating back only four weeks. The parents were healthy, as were two other children. This child was small and gained in weight slowly, weighing nine and a half pounds at the age of six months. The symptoms were merely an increasing pallor and slight fever. There were minute hemorrhages over the neck and extremities. The case was looked upon as one of severe secondary anemia of unknown origin. The temperature ranged between normal and 103° F. As the hemorrhages continued to appear, a transfusion of blood was given, but was of no permanent benefit. The child failed rapidly and died. At autopsy a thymus weighing thirty-six grams was found, which was very large, the upper limit of the normal being ten grams. Beside the sarcomatous condition of the thymus similar changes were found in one of the lymph nodes, in the spleen, and in the lungs. The case was interesting because the child presented none of the symptoms usually associated with enlarged thymus, and because of the rarity of sarcoma of the thymus in infants and young children the case was perhaps unique.

Heart Displacement Apparently Due to Mediastinal Emphysema Following Aspiration Pneumonia.—Dr. E. C. Fleischner stated that this patient, a boy, three and a half years of age, following a fall into a sand pile, became wheezy. Four hours later he was brought to the hospital with sibilant râles over the lungs, both anteriorly and posteriorly. The x ray showed no foreign body and no condition calling for surgical intervention. The heart was displaced slightly to the right. The boy contracted a definite pneumonia on the left side, involving the middle lobe. The displacement of the heart did not seem to be due to fluid. At the end of forty-eight hours a subcutaneous emphysema appeared above the clavicle and extended down to the pelvic bone. The pneumonia subsided, to be followed by a bronchiectasis in the left lung. He had a prolonged illness, but the x ray taken five months after the accident was to all intents and purposes normal. In this case the heart had gone rapidly and completely to the right. It seemed reasonable to believe that injury during the accident had caused air to push through the lung and force the heart to the right, and then work its way out into the subcutaneous tissues.

A Case of Lymphosarcoma.—Dr. Charles A. Fife, of Philadelphia, said the unusual features which prompted him to report this case of lymphosarcoma were: 1. The treatment by x ray of an enlarged cervical lymph node, the probable primary lesion, on the supposition that it was tuberculous. The node had not been excised. There was no other evidence of tuberculosis. 2. Wide metastasis, within five months of the cessation of röntgenism. 3. The extensive involvement of the tracheobronchial lymph nodes producing massive exudation into the left pleura, but causing no other signs of mediastinal compression. 4. The high, irregular temperature, extending over a period of one year. 5. The polynuclear leucocytosis in blood and lymphocytosis in pleural exudates. 6. The tremendous enlargement of the spleen and of the liver. 7. The varieties of previous diagnoses, including influenza, endocarditis, secondary anemia, tuberculosis, adenitis, leucemia, Hodgkin's disease, and substernal empyema. 8. The rapid reduction in size of the bronchotracheal lymph nodes, and the improvement in the condition of the patient after x ray treatment to the mediastinal region. 9. The marked effect of x ray and radium on the lymphosarcomatous tissue as shown in the pathological specimens.

The patient was a boy, nine years old, giving a negative medical history until his seventh year, when a slowly enlarging right cervical lymph node was detected. Notwithstanding the removal of tonsils and adenoids the gland attained in ten months the size of a large egg. After three röntgen treatments given in the course of a month the mass became the size of a hickory nut, and after twenty treatments, in fifteen months, the disease was thought to be eradicated. The boy returned about four months later with a recurrence and died six months after coming under observation. The hemoglobin had fallen to thirteen per cent., the red cells to 500,000, and the whites to 2,000, eighty per cent. being lymphocytes. The postmortem diagnosis was small and large celled lymphosarcoma. The structures involved were the cervical, tracheobronchial, and retroperitoneal lymph nodes, the spleen and the liver. The chief histological interest lay in the fact that the nodes low down in the abdomen where they were unaffected by radiation were full of typical, active tumor cells, while the lymph nodes in regions treated by x ray or radium showed retrograde changes in the tumor cells, and thus many tumor cells were replaced by dense connective tissue.

The Duct Sign in Mumps.—Dr. David Murray Cowie, of Ann Arbor, reported that in ninety-seven per cent. of fifty-seven cases of parotid mumps a red spot was observed at the orifice of the Steno's duct which developed and disappeared under the influence of the disease. The duct itself became teatulated. The detailed description of the color change and the duct involvement was given, and illustrative cases cited. The sign developed early in the disease, sometimes ahead of the swelling of the parotid, and disappeared when the duct returned to normal. The sign was uninfluenced by the degree of fever. Submaxillary ducts showed no redness when the submaxillary glands were involved. Whether the duct sign was pathognomonic of specific parotiditis, or was present in other acute inflammatory conditions, had not been determined. Because of the occasional occurrence of teatulation of Steno's duct in a certain percentage of apparently normal persons and the occasional finding of redness of its orifice, careful differentiation should be made. The duct sign should be regarded simply as corroborative evidence of parotid gland involvement.

A Case of Priapism Resulting from Rapidly Spreading Malignant Myxosarcoma with Generalized Metastasis.—Dr. David Murray Cowie reported this case, the unusual feature of it being the early age of the boy, nine years.

Streptococcic Angina with Purpura Hemorrhagica and Multiple Infarcts of the Skin and Subcutaneous Tissue.—Dr. Walter R. Ramsey, of St. Paul, stated that this patient, two and a half years old, was brought to the city from a distance of two hundred miles. His family and past history were negative. His present illness began with a sore throat two weeks before. After a few days there was swelling of both legs and an offensive odor from mouth and nose. Upon arrival at the office the child was in a moribund condition. The skin and mucous membranes were extremely pale and there was marked edema about the face, the eyes being swollen shut. The legs and feet were markedly edematous. There were numerous petechial areas scattered over the entire body. The fauces and tonsils were covered with a foul gray membrane, and the entire mucous membranes of the mouth, including those of the lips, were gangrenous. The temperature was 104° and the pulse was rapid and weak. The condition was so suspicious of diphtheria that 20,000 units of antitoxin were given immediately. The culture, however, proved negative. The purpura cleared up under this treatment. Deep sloughs developed in a few days on the right wrist, on both ears, both elbows, and on the perineum. The palate sloughed off. The middle phalanx of the middle finger on the right hand sloughed out, and later healed perfectly, leaving a finger with one phalanx missing. A dark area over the occipital region sloughed out and part of the bone also. All these areas healed under Dakin's solution, applied four times a day.

Anaphylaxis Following an Intradermal Protein Sensitization Test.—Dr. Henry J. Gerstenberger and Dr. J. H. Davis, of Cleveland, reported this case, which showed the following points of interest: 1. A boy, seventeen months old, who had never received egg in any form, presented an extreme anaphylactic shock after an intracutaneous administration of egg yolk allergen and egg albumin in doses of one and two mg. 2. This child, who had received cow's milk from his third week of life and who had suffered from eczema and asthma, showed a negative intracutaneous test to cows' milk casein and cows' milk albumin. The intracutaneous injection of cows' milk allergen responded within twenty-four hours with an indurated and red area of infiltration not unlike that of an ordinary positive Von Pirquet test, but entirely different from an urticarial wheal. 3. This same boy was not sensitive to other proteins. 4. The first severe anaphylactic shock on December 8th did not prevent the development on December 13th of a second, following the administration of egg yolk allergen five days later. 5. The x ray photographs made at different intervals on the same day showed a definite wide abnormal thymic shadow and again a perfectly normal picture. The former, as found by fluoroscopic examination, occurred during extreme expiration, the latter during extreme inspiration. 6. The thymus gland, if it really were large in an abnormal sense, did not produce the respiratory difficulty in a mechanical way. 7. This patient might be a case of status lymphaticus and this condition might be responsible for his congenital pathological sensitiveness to egg proteins and his anaphylactic reaction. If, however, he should be found not to be sensitive to other proteins, especially horse serum and horse hair protein, the status lymphaticus could hardly be accepted as a causative factor in his condition, for it would be difficult to imagine how a status lymphaticus could make a child sensitive solely to egg protein and not to oats, milk, horse serum or horsehair proteins. The child was revived from his severe anaphylactic shock by means of subcutaneous injections of adrenalin and the use of artificial respiration. One should always have adrenalin at hand while making these tests.

Has Malt Soup Extract an Antiscorbutic Value?—Dr. Henry J. Gerstenberger, of Cleveland, reported that while studying the respiratory quotient of scorbutic infants, it was decided for definite reasons to feed these infants with Keller's malt soup, a mixture which had made for itself a record of producing and never curing scurvy. During this study three infants with marked and severe scurvy recovered unexpectedly in a rapid and complete manner. Dr. Gerstenberger discussed the factors that might have influenced the antiscorbutic content of this special lot of malt soup extract.

A Brief Report on Lactic Acid Milk.—Dr. DeWitt H. Sherman, of Buffalo, gave a report on some original work that he and his associate, Dr. Harry R. Lohnes, had been doing this last winter on lactic acid milks. As a therapeutic food of many years' standing the various accepted reasons for its beneficial effect were discussed. At first the good results were supposedly due to the Bulgarian bacillus. This idea had been stated to be incorrect. The second reason was that the increased acidity of the gastric contents, as they passed into the duodenum, stimulated the intestinal secretions. This had been put aside. The third reason, which at present seemed most rational, was that lactic acid was efficient through Meltzer's law of contrary innervation; that it was productive of good results through the increased amplification of the peristaltic wave, and by this increased motility, function was increased.

He compared the relative value of protein milk with lactic acid milk and showed some of their differences. He questioned the extolled value of protein milk because its soluble salts were removed and its insoluble salts, those of calcium and magnesium, were in excess. He appreciated the value of protein milk in those infants whose tolerance for sugars was broken. He laid stress on the acidity of the lactic acid milk as a reason for the infants refusing it or rejecting it. The desired acidity he placed at seventy to ninety, as measured by a decinormal sodium hydrate solution. To keep this acidity he gave two original methods for making lactic acid milk. The first was to culture the boiled and hence sterile milk, and put it away at a temperature of 85° F., in an ordinary icebox so commonly found in the household. It was to remain there overnight, and in the morning would be found of approximately the correct acidity. It was then to be boiled again to destroy the activity of the Bulgarian bacillus, and put away on the ice. The second method was even simpler. Culture the boiled milk, allow it to stand in a warm place, and in twenty-four hours the acidity would reach 180 to 190, possibly 200, an acid reaction of sufficient degree to destroy the Bulgarian bacillus. Dilute this very acid lactic acid milk with an equal amount of sweet milk, and the correct acidity is secured. Upon adding the two a fine clotting occurs, and when boiling the second time active stirring is essential to retain a homogeneous mixture. To make the formulæ flexible in reference to fat, a skimmed lactic acid milk was first used, and as indications permitted, whole lactic acid milk was gradually substituted for it.

(To be continued.)

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CXIII, No. 2. NEW YORK, SATURDAY, JANUARY 8, 1921. WHOLE No. 2197.

Original Communications

THE FAMILIAL DISTRIBUTION OF THE MIGRAINE-EPILEPSY SYNDROME.*

By J. ARTHUR BUCHANAN, M. D.,
Rochester, Minn.,
Fellow in Medicine, The Mayo Foundation.

Numerous studies have been made in the attempt to prove the origin of the tendencies which lead in certain persons to essential epilepsy. Various substances have been incriminated, but as time passed all have had to be more or less definitely excluded. The impetus to the study of the germ plasm, brought about by the publication of Weismann's monograph on this basic plasm in the interrelations between generations, has stimulated the study of its rôle in the transmission of epilepsy. If epilepsy is hereditary the factor which is the determiner of its subsequent manifestation must be contained in either the spermatozoa or in the ovum, and therefore, as Hippocrates said, epilepsy begins to be formed while the fetus is *in utero*.

Mendel preceded all investigators in showing the germ plasm to possess the ability of distributing determiners of transmissible characters in certain more or less fixed ratios (3). This lead has been followed by general biologists; hundreds of characters have been worked out definitely so that a breeder can know within very narrow limits what the physical make up of the next generation will be. Until the present time this subject in the human race has received very little consideration, and probably only in the hemophilic have we evidence that a peculiarity of the human race is definitely segregated during the manifold changes that take place in the development of the fertilized ovum.

Shortly after beginning my work in the Mayo Foundation I was struck with the occurrence of a rather fixed numerical ratio between the normal and the abnormal in families subject to migraine. Also when I carefully took the histories of essential epileptics for information concerning the immediate parentage, the siblings of the patient, and, when possible, concerning the grandparents, I obtained a history of transmitted migraine in a good majority of cases. Our endeavors to collect data about suspected hereditary conditions are not more successful because of the belief that if the father and mother are clear of any manifestations of the condition there is nothing to be gained by carrying investigations into the side lines. This is a gross error, and one which has prevented the collection of more ample and accurate data. The father and mother may be free of the condition although they have the ability to transmit the condition; they are spoken of as the heterozygotes, and it is the study of the heterozygotes that necessitates the keenest scrutiny. The study of the homozygote, the person with the condition, who is pure in the mendelian sense, and of the homozygote's family reveals convincing information. In the investigation of the heterozygote inquiry should be made concerning brothers and sisters, brothers and sisters of the immediate parents, and the grandparents. Definite notation must be made of the number of persons in each generation so as to ascertain numerically those who have and those who do not have the condition.

The conception of epilepsy as an expression of the mendelian segregation of the germ plasm leads to the thought that if such be the case, convulsive seizures at various times are physiological for the patient. The seizure represents the end of yet undetermined cyclic biological processes in the general economy of the subject. The term hereditary disease for epilepsy, migraine, or any other condition is not correct in the true sense of the word disease. The appearance of a true hereditary condition in man leads to the necessity for the classification of a subvariety of mankind and this subvariety calls for a different physiological interpretation than that applied to mankind as a whole. It is apparent from the findings quoted in this paper that in the migraine-epilepsy syndrome we have evidences that there is a subvariety of man characterized by painful or convulsive seizures which must be chemical in their substrata. It is impossible to conceive of the determiner of an hereditary character as anything else than a chemical substance, since everything that results from the activities of the germ plasm is chemical in nature. Given an unknown chemical substance in the germ plasm, a product must result that is entirely or to a large extent different in its physiological chemistry.

The proof that the epileptic is the possessor of a physiological chemistry that is different from that which we call normal for man is being demonstrated with difficulty but gradually by numerous workers. Binswanger has called attention to certain seroreactions in the epileptic which have a certain degree of variability with the progress of the condition. Thabius and Barbé have found the spinal fluid of epileptics to contain extractives below nor-

---

*Presented for publication November 30, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

mal: increased ash and chloride content, and decreased albumin content. Allers has found the chemistry of the postconvulsive albuminuria associated with an unknown acid production. Tintemann found that the total acidity of the urine is increased, and the increase is due especially to phosphoric and uric acids. The chemical instability of the bodily mechanism of the epileptic has been demonstrated by Florence and Clément, who were able to produce convulsions in the epileptic by the administration of ammonium acetate or carbonate, unless the patient was under bromide medication. These two investigators also found that the essential epileptic oxidizes benzene more rapidly between attacks than the normal person (during the attacks the oxidation is less rapid), and that phenol sulphates appear in the urine sooner in the epileptic. Handelsman has proved, in spite of many assertions to the contrary, that cholin has nothing to do with the production of convulsions in the essential epileptic. Loewe in the study of urine from epileptics found a variable amount of undialyzable substances. Allers and Sacristán failed to find a nitrogen equilibrium in epileptics, which they were unable to explain. They are also investigating the purin metabolism. Trevisanello has found a marked anaphylactic reaction in guineapigs treated with the blood serum and spinal fluid of the essential epileptic, while controls treated with serum and spinal fluid of normal persons did not have such a reaction.

A recordable physical difference in epileptics has been described recently by Scripture. The study of the melody plot of the voice by a special instrument has shown that the voice of the epileptic presents a diminution or absence of the finer fluctuations. This inflexibility, apart from the rigidity of monotonous speech, does not occur, according to Scripture, in any organic condition yet studied, and has been used in differential diagnostic tests with success.

Clark has described in many papers the peculiarities of the epileptic personality. Marsh has recently called attention to the same condition. But one case in which this peculiar type of makeup is described is recorded in the Mayo Clinic. This patient was also the carrier of the migraine factor. I have investigated the types of personality, and I am prepared to state that this particular type rarely occurs in the patients at the Mayo Clinic. The traits of the epileptics with whom we have to deal are so excellently described in an article by Ryther and Ordway that repetition is unnecessary. It is apparent that our epileptics are in temperament, education, economic efficiency, and in personal experiences identical with those found in Boston (Ryther and Ordway), but somewhat different from those found in New York (Clark).

In a recent study of the nature of the transmission of migraine it was found that migraine demonstrates the segregation of the determiners in the germ plasm; it presents a mendelian ratio of 3.08 to 1 (6). In a previous investigation of migraine in relation to epilepsy seventy-five per cent. of the 128 patients studied had a migraine strain in their ancestral or personal history (5). The occurrence of such a high percentage of migraine in the study of the epileptic led to the investigation of a series of epileptics in whom the family history contained a definite statement of the number of children, the presence or absence of migraine in the family, and the presence or absence of epilepsy, with a numerical statement of the number affected with either condition. Forty-six epileptic families were studied from the viewpoint of the distribution of epilepsy considered as a manifestation of the migraine factor, and in order to learn the heritage of the children when no history of migraine had been found. The families with epileptic parentage were also studied in order to learn if they followed the same general principle. Either the father or the mother of thirty-five patients (seventy-five per cent.) had migraine, six patients (thirteen per cent.) had no knowledge of migraine or epilepsy in the family, and five (ten per cent.) fell in the heterozygote parentage group. The forty-six families studied consisted of 262 children, of whom 198 were normal, and sixty-four had epilepsy or migraine, giving a mendelian ratio of 3.09 to 1. This ratio is so nearly that obtained previously for migraine alone that they can be considered identical. Forty-four (sixty-eight per cent.) of the sixty-four children had epilepsy, and twenty (31.2 per cent.) had migraine; of the latter two were the offspring of an epileptic woman mated with a normal man.

Thirteen (twenty-nine per cent.) of the forty-four epileptics had migraine as an alternating, preceding, or combined condition. The only patients with socalled arrested epilepsy had migraine as a replacement condition. In the study of the crossing of two pure strains of migraine it was found that all the children from such matings had migraine. One family was found in which a woman with migraine was mated with a man with epilepsy. If epilepsy is considered a manifestation of the same basic condition as migraine, all the children in this family would be expected to have either migraine or epilepsy. All had migraine; in addition one had epilepsy, which alternated irregularly with the attacks of migraine.

The series comprising this study is too small from which to draw conclusions, but it is sufficiently large to stimulate the belief that the essential convulsive seizures are a manifestation of the peculiarities transmitted to persons by the migraine factor. It also leads one to suspect that the advice commonly given to epileptics to avoid marriage or not to have children will not eventuate in the reduction of the number of epileptics, for the basis on which epilepsy apparently depends is the person with migraine who is married without any thought of the type of progeny that may result.

BIBLIOGRAPHY.

1. Allers, R.: Zur Theorie der postepileptischen Albuminurie, *Ztschr. f. d. ges. Neurol. u. Psychiat.*, 1912, Orig., viii, 361-380.

2. Allers, R., and Sacristán, J. M.: Vier Stoffwechselversuche bei Epileptikern, *Ztschr. f. d. ges. Neurol. u. Psychiat.*, 1913, Orig., xx., 305-326.

3. Bateson, W.: Mendel's Principles of Heredity, *Experiments in Plant Hybridization*, Cambridge University Press, 1909, 317-361.

4. Binswanger, O.: Die Abderhaldensche Seroreak-

tion bei Epileptikern, *München. med. Wochenschr*, 1913, lx, 2321-2325.

5. Buchanan, J. A.: A Study of the Hereditary Factors of Epilepsy, *Minn. Med.*, 1920, iii, 526-538.
6. *Idem:* The Mendelianism of Migraine, *Medical Record,* 1920, xcviii, 807-808.
7. Clark, L. P.: The True Epileptic, New York Medical Journal, 1918, cvii, 817-824.
8. *Idem:* Treatment of the Epileptic Based on a Study of the Fundamental Makeup, *Journal A. M. A.*, 1918, lxx, 357-362.
9. *Idem:* Is Essential Epilepsy a Life Reaction Disorder? *American Journal of the Medical Sciences,* 1919, clviii, 703-711.
10. *Idem:* A Consideration of the Aftercare of Arrested Cases of Essential Epilepsy, *American Journal of the Medical Sciences,* 1920, clx, 582-589.
11. *Idem:* A Psychological Interpretation of Essential Epilepsy, *Brain,* 1920, xliii, 38-49.
12. Florence, J. E., and Clément, P.: L'épreuve de l'ammoniurie expérimentale chez l'epileptique, *Comp. rend. Acad. d. sc.*, 1909, cxlix, 462-465.
13. *Idem:* L'épreuve de la phénolurie provoquée chez l'epileptique, *Compt. rend. Acad. d. sc.*, 1909, cxlix, 368-370.
14. Handelsman, J.: Experimentelle und chemische Untersuchungen über das Cholin und seine Bedeutung für die Entstehung epileptischer Krämpfe, *Deutsch. Ztschr. f. Nervenh.*, 1908, xxxv, 428-432.
15. Loewe, S.: Untersuchungen über die Harnkolloide von Epileptikern und Geisteskranken, *Ztschr. f. d ges. Neurol. u. Psychiat,* 1911, Orig., vii, 73-111.
16. Marsh, C. A.: A Psychological Theory of the Cause of Epilepsy, with Special Reference to an Abnormal Muscular Expression of a Strong Emotional Drive, *American Journal of the Medical Sciences,* 1920, clix, 450-458.
17. Ryther, Margherita, and Ordway, Mabel: Economic Efficiency of Epileptic Patients, *Journal of Nervous and Mental Diseases,* 1918, xlvii, 321-342.
18. Scripture, E. W.: The Nature of Epilepsy, *Proceedings Royal Society of Medicine,* 1920, xiii, Section in Psychiatry, 18-23
19. Thabuis and Barbé: La Composition physicochemique du liquide céphalo-rachidien des epileptiques, *Rev. neurol.*, 1913, xxi, 248-253.
20. Tintemann, W.: Die Bewertung der Befunde der Gesamt-Stickstoffausscheidung beim Epileptiker im Intervall, *Ztschr. f. d. ges. Neurol. u. Psychiat.*, 1914, Orig., xxiv, 49, 52.
21. Trevisanello, C.: Untersuchungen über das Blutserum und die Cerebrospinalflüssigkeit von Epileptikern, *Centralbl. f. Bakteriol,* 1913, Orig., lxix, 163-166.
22. Weismann, A.: *The Germ Plasm. A Theory of Heredity.* New York: C. Scribner's Sons, 1912, 37-468.

ANIMAL VERSUS VEGETABLE PROTEIN.

By William Henry Porter, M. D.,
New York,
Professor Emeritus in Pathology and General Medicine, New York Post-Graduate Medical School and Hospital.

To understand thoroughly the protein problem is no easy matter. So much so that I do not wonder at a physician who, in making a friendly criticism of my recently published book (1), took exception to the emphasis placed upon the utility of the animal as against the vegetable protein, and wrote, "I cannot follow you." This I fully understand, for the simple reason that a complete knowledge of this protein problem is the most consummate task in connection with chemicophysiology.

Certain facts, however, stand out clearly, such, for instance, as these: First, at the very beginning of our life and throughout our existence *in utero,* the animal economy is furnished with animal protein only; Nature must have some reason for this. Second, as soon as we are expelled from the uterine cavity, the infant is given an animal protein. This particular protein, casein, is especially valuable, for it is the only known proteid, out of which all other protein substances can be produced chemically, casein having some forms of amino acids that other protein compounds do not contain, and without these amino acids nutrition cannot be maintained. As for instance, while gelatine is a protein substance, it will not by itself furnish nutrition to animal life. But if a small quantity of casein is added to a large quantity of gelatine, the gelatine will become a highly nutritious protein substance, and the animal economy will thrive, as it were, on gelatine.

These facts naturally stamp the animal proteins as the essential ones. Enhancing the nutritive value of protein by the addition of a little casein unquestionably applies to many other protein substances, more highly nutritious to begin with than gelatine, but less so than casein. If these facts are true during intrauterine life and early infancy, they ought certainly to be equally so as life progresses, and far more so when disease processes have to be combatted.

When the term protein excess is used in connection with metabolism, it indicates that more protein is entering the blood than the hemoglobin can furnish and distribute oxygen to reduce completely the protein substances. This refers to normal body states. For the air sacs always contain a large superabundance of oxygen, assuming the animal is breathing in anything like a natural atmosphere.

When we come to deal with pathological conditions, the nonreduction may not be due simply to an overintake of protein, but involves many very complicated conditions, such as deficient production of hemoglobin, a too rapid blood current, a too slow blood current, toxic substances in the blood current preventing the discharge of oxygen, and interference with the power of oxygen to split the protein compounds. The two most potent factors in defective oxidation, however, are a decreased alkalinity of the blood and a diminished supply of available glucose.

No matter how produced, defective oxidation means overproduction of catabolic bodies and a reduction in the amount and perfection of the normal excretory products. Most notable, and the greatest index to imperfect oxidation of the protein substances, is an overproduction of uric acid. Its determination is the easiest of all the protein catabolins, hence it is the most important factor.

Now we come to the essential differences existing between the animal and vegetable protein substances as two distinct classes. The animals are monomolecular in their construction. On the other hand, the vegetable protein substances are multimolecular in their composition. That is to say, the molecules are doubled up—how many times is not accurately known; hence the chemist writes after the formulæ *n* times, thus presenting at the starting point an unknown quantity. The doubling may be in the form of a 2, 4, 8, 16, 32, 74, 148, 296 multiple, and so on up. This much we do know, that they are many times multiplied, and that they must be reduced to a single molecular state before the digestive ferments can begin to peptonize them.

On the other hand the animal protein substances have been reduced to the single state by our herbiverous friends in the animal kingdom, who have many stomachs with endless feet of intestine, as compared with the human family and other meat-eating species.

The result is, that the ferment bodies in the human digestive tract can immediately bring to bear their chemical digestive activity on these single animal protein molecules and convert them into a peptone. Here is where the danger lies in a too free use of the animal foods as compared with the vegetable protein substances. With the former, too much will be peptonized and the blood overloaded with protein compounds, unless the quantity ingested is kept well within the physiological limit. When so done, however, the strain upon the digestive energy is kept at the lowest ebb, while the system is being fully supplied with constructive material of the animal protein class.

On the other hand, the vegetable protein has to be split all the way down in the digestive canal, by its chemical activities, until it becomes a single molecule like that found in the animal kingdom before the peptonizing process can begin. In many instances this is a long and tedious process. So much so, that with the vegetable class from fifteen to eighty per cent. of the protein substances contained in this class is lost in its transit through the alimentary canal. With the animal class the loss ranges between two and eight tenths and five per cent., thus making the animal class very much more economic from this viewpoint. This loss when the vegetable class is used exclusively is often so great that constructive nutritive activity cannot be fully maintained.

The overworking of the digestive energies with a too abundant vegetable supply tends after a time to weaken the digestive energies. This, together with the overirritation by the undigested residue, and the putrefactive fermentation that is bound to follow when the digestive ferments are deficient, often becomes a menace to life. All this naturally leads to the fact that if one eats too abundantly of animal foods alone, or in conjunction with an over supply of carbohydrate and fat foods, he can and does very easily exceed the oxygenating capacity of the system. This, however, is no excuse for choosing a food supply that overtaxes the digestive energies, to cut down the protein supply. On the other hand, it shows conclusively that the correct thing to do is to keep the supply of animal foods within rational physiological limits.

This is what I have always contended, because it spares digestive and dynamic energy, and yet furnishes the system with its full quota of available constructive nutritive material. Even though there is this wide difference in economic value between the two classes, it does not indicate that the one class should be used to the exclusion of the other. For they both have their good and bad points, neither one having all that is perfect for the highest grade of nutritive activity. Therefore to secure the best balanced food supply, the two classes must be used, selecting from the animal class chiefly to secure the protein supply, and using the vegetables to furnish the salts and socalled vitamines.

At this point it might be well to say that with this protein problem I have been dealing only with what may be called constructive proteins; not with the other classes, which are in the nature of activating agents, enzymes, and ferment bodies, and not directly tissue builders. Neither have I tried to contrast the two classes in their many points of difference. While it might be interesting more fully to prove that the one cannot be used to the exclusion of the other, it would be too wide a digression from the main subject of this paper.

This same physician in his criticism objected to the animal class on account of the large amount "of poison waste which was in process of elimination from the animal at the time it was killed, but the elimination of which was checked by his [sic] slaughter," and complained that we were compelled to take this poison waste when we obtained our protein supply from a "juicy steak."

This bugaboo about poison waste and its entrance into the system on account of its being attached to the animal fibre, has always seemed a pretty farfetched argument, excepting the leucomaine and ptomaine poisons, practically developed after the death of the animal and also produced from decomposed and dead vegetable protein; both of which conditions, however, are very rarely met with.

The reason that this poison waste danger is merely a scare, is proved by the fact that under normal circumstances only a fraction of one per cent. of any effete material is ever found in the blood, lymph, or tissues of the body. But their natural place is in the excreta eliminated from the animal economy and chiefly found outside the body, not within. This is a fact which does not seem to be generally recognized. In this connection it is reasonable to suppose that most animals when killed are in a fairly normal condition. Hence, very little poisonous material is taken with the carcass from the slaughter house to the retail market.

Having gained the knowledge that no matter what the origin of the protein molecule is, and that it must be a single one before the digestive ferments can act upon it, the next question is, What happens to these single protein molecules? We find that they all, no matter what their origin, have to be transformed by the action of the digesting ferments into that particular form of protein known as a peptone, this being the only form in which a protein substance can enter the epithelial cells lining the intestinal canal. We also know that this particular protein, peptone, is a most deadly poison. We also know that in its passage through these cells it loses its identity and toxicity and emerges on the other side of the cell into the blood stream in three other forms of protein substances, namely: serum albumin, globulin, and fibrinogen, and that serum albumin is composed of three other distinctive protein bodies. How many more there may be is yet to be determined. Thus, that which was a single molecule on entering the epithelial cell lining the intestinal tract, appears in the blood in five distinct forms.

Thus this protein peptone molecule becomes as distinctive as H_2O does, no matter what the origin of either may have been.

With this understanding of the digestive act, and when the digestive secretions are normally produced both as to quality, composition and amount, there is no putrefactive or abnormal fermentation taking place in the alimentary tract, and there is no toxicity of the system from this source. Thus we find that nature is quite capable of maintaining all her power to keep these horrible poisons well out of the system, and consequently we do not suffer from the much dreaded calamity.

Let down, for any reason, the full power of the natural digestive ferments, and at once the microorganisms of all kinds that produce pathogenic fermentation will get busy generating abnormal products, some of which may have a high toxicity, which latter will poison the system, but not because an animal protein was used instead of a vegetable one. All fruits, and especially those highly charged with acids and saccharine compounds, are very prone to ferment and irritate the intestinal mucous membrane. Likewise all highly indigestible foods act as irritants to the mucous membrane. This irritation augments the secretion of mucus from the intestinal wall, which is often thick and tenacious, and this mucus is in a large measure the culture medium in which the pathogenic microorganisms thrive. Hence this class of foods should be studiously avoided if we do not wish to court real danger.

Therefore my rule has been, know your chemistry and physiology, and the composition and digestibility of all foods. Then select those most easily digested, least fermentable and irritating to the intestinal canal. Select from both animal and vegetable kingdoms according to the result to be obtained, and in such manner that the oxygenating capacity will not be exceeded. Then we will be following pretty close to Nature's law or laws; in fact, so nearly that we can get almost any result we desire to attain.

RFFERENCES.

1. PORTER: *Eating to Live Long.* Reilly & Lee Company, Chicago, 1920.

46 WEST EIGHTY-THIRD STREET.

Further Research in the Treatment of Hypertension.—Leslie Thorne Thorne (*Practitioner,* May, 1920) says that in cases of hypertension, whether sclerotic or not, the blood pressure is always lowered by immersion in a Nauheim bath, whether that bath is of the still or the effervescent variety. Even an advanced condition of arteriosclerosis does not counterindicate this treatment. The Nauheim baths are useful not only for treatment, but also for the purpose of differentiating between sclerotic and presclerotic hypertension, as the effect of the baths upon the blood pressure differs materially according to the condition of the vessel walls.

PREVENTION OF VENEREAL DISEASE.

BY ETTIE A. ROUT (MRS. HORNIBROOK),
London, England.

In the NEW YORK MEDICAL JOURNAL for October 30, 1920, Dr. Satterthwaite quotes me as follows (NEW YORK MEDICAL JOURNAL, October 9, 1920):

> In fact, Miss Rout asserts that prophylaxis is successful when properly applied in only two thirds of the cases, as shown by the returns of the American, Canadian, and Australian armies.

What I actually said was:

> Wherever prophylaxis was properly applied, at least two thirds of the cases of venereal disease were eliminated. . . . In particular cases enormously better results than this were attained.

The War Department, Washington (General Order No. 135, December 23, 1919), says:

> Its use (that is, the use of prophylaxis) appears to reduce the liability to venereal disease among those exposed to about one third of what it would be without prophylaxis

Prophylaxis, or disinfection, of course does not fail at all (practically speaking) when properly applied. Failure to apply disinfectants reduces the efficacy of the system of prophylaxis. This failure among Paris leave men was one third due to carelessness, one third to drunkenness, and one third to willful infection.

During the latter part of the war, venereal disease had to be classified as a "selfinflicted wound." Diseased women were known to charge more for sexual relationship than clean women. Such was the state of mental distraction into which some men were driven by the ordeal of battle that they actually paid diseased comrades to infect them for the purpose of securing a temporary release from the firing line. Failure to protect the men was due at times to the entire absence of disinfectants. I know by experience that the distribution of portable disinfectants, and the spread of a knowledge of selfdisinfection, was responsbile for preventing much disease; but the critics of the socalled packet system never tell us that there was frequently no system at all and still more frequently no packets. You see, there was a war on at the time! The actual fact is that the British Army succeeded in distributing an average of one calomel capsule per soldier per annum. The Australian and New Zealand troops on leave before 1918 were poorly provided with the means of disinfection; in 1918 not more than half the men on leave actually got their issue of disinfectants (except those going to Paris); after the armistice, most of our men were absent without leave at various times, and travelled very widely, so that it was impossible to provide them with disinfectants. I lectured to some 25,000 of our soldiers during May and June, 1919, and found that approximately ten per cent. had been provided with disinfecting packets—ninety per cent. admitted going on leave without protection.

The following is a digest of a paper read by an American doctor (then in the Canadian Medical Service), viz., Captain Walker, Medical Officer in care of British Medical Report Centre, Pepiniere Barracks, Paris, before the Venereal Disease Conference arranged by the American Red Cross in the Hotel Continental, Paris, in April, 1918:

During August-September, 1917—sixty days—a little over five thousand officers and men came on leave to Paris; in 1,038 of these men venereal disease developed—over twenty per cent. Leave to Paris was then closed. Leave was reopened on November 8, 1917, and at the same time there was opened the Medical Report Centre, where all British, Australian, New Zealand, South African, and Canadian soldiers on leave to Paris had to report before they could draw pay in Paris. Calomel tubes were offered, the soldiers having the option of refusal. The number who refused was approximately one to the thousand. From November to March, 60,000 tubes were issued, and 29,000 prophylactic treatments given.

Captain Walker stated that since his own enlistment he had been responsible for issuing over 100,000 tubes and giving 53,000 treatments, and that he had yet to find one man who took his tube of calomel ointment, used it as directed, and reported for prophylactic treatment in a properly conducted centre, who had nevertheless contracted venereal disease.

The actual result of the preventive measures described was that from November 8, 1917, to March 31, 1918, the infection rate of over twenty per cent. was reduced to less than three per cent.—one per cent. was due to drink, one per cent. to willful infection, and one per cent. to carelessness and conceit.

Speaking in regard to licensed houses, Captain Walker said that he had not found one case of venereal disease contracted in a licensed house in the city of Paris, and he could only suppose that the people who were responsible for putting the licensed houses in Paris out of bounds knew nothing at all about the real facts of the case. In the licensed houses of the city of Paris during the year 1917, only five cases of venereal disease were contracted, and in 1918, up to April 20th (the day he was speaking), there had not been one case of venereal disease contracted in a licensed house in the city of Paris. (Of course, the Paris houses were well conducted and medically supervised.)

Out of two hundred women arrested on the streets of Paris during the month of April, 1918, over twenty-five per cent. were found to be infected with venereal disease. But this was much better than in 1917. In the months of November and December, 1917, the French authorities had a round-up on one boulevard of seventy-one women, of whom fifty-five were infected. A few days later, about a hundred women were arrested, and ninety-one per cent. were infected with venereal disease.

Nevertheless the Americans put the Paris licensed houses out of bounds to their soldiers, and the men consorted with the much more dangerous women of the streets. The British order in this respect was never enforced. I suggested the following working compromise to the English L. of C. officers and it was unofficially accepted:

1. The British authorities in Paris do not know where the French licensed houses are;
2. It is not their duty to find out;
3. They have no staff for ascertaining this knowledge.

Experienced military and medical officers knew that the licensed houses made the least dangerous provision for the normal sexual needs of the men, and we knew that we could not extinguish or paralyze the sexual instincts of the majority of the soldiers, however much we tried to encourage continence. But we knew also that all the irregular intercourse could not be confined to the licensed houses, and therefore portable disinfectants and prophylactic stations were required; in fact, all means of controlling venereal disease are required—social, moral, medical, and legal.

Dr. Satterthwaite, on the other hand, apparently condemns medical and legal protections, although he says:

> We cannot, of course, abolish venereal diseases now, for the present sources of contagion must necessarily continue for an indefinite time to be a danger to the public, even if no new instances of the disease should occur. Moreover, we can never prevent clandestine relations.

To admit this, and oppose personal disinfection, seems to me an untenable position.

The answer to those who wish to rely only on moral prophylaxis, is that this method of controlling venereal infection has already broken down; that is why venereal disease has spread so widely.

The answer to those who wish to rely on licensed houses only is that in Paris these did not of themselves prevent some twenty per cent. of British and overseas troops on leave becoming infected in August-September, 1917.

The answer to those who wish to rely on prophylactic stations only is that even in wartime these alone did not prove sufficient to control venereal diseases—the uncontrolled diseased women in England succeeded in contaminating our men faster than we could instruct the men and provide the means of disinfection.

Finally, let me express my own opinion that although there are many objections—moral, social, and medical—to the licensed house system of Paris, it proved nevertheless infinitely preferable to the unlicensed house system of London. This French system, supplemented by our own issue of portable disinfectants to Anzac soldiers (Australians and New Zealanders), and aided most generously and most valuably by the American Red Cross Dispensaries and the American Army Prophylactic Stations (all of which made our soldiers welcome to their medical benefits) was responsible for the fact that Paris gave us the lowest rate of infection in 1918, whereas London gave us the highest.

May I also, without offense, point out that such an inquiry as Dr. Satterthwaite asks for would be most useful in dispelling many illusions with regard to the American Army statistics? For example, in a book recently sent me for review, viz., *Sanity in Sex,* by William J. Fielding, published by Kegan Paul, the following excerpts are taken from a circular issued by the Surgeon General of the American Army:

> A. During the fifty-three weeks ending September 27, 1918, there have been 178,204 venereal disease cases reported under treatment in the United States Army in France.
>
> B. Reports indicate that approximately eighty-five per cent. of this number entered the army already infected, and that approximately fifteen per cent. of all cases reported were contracted after enlistment.

And Mr. Fielding says this "showed a great improvement in venereal health in comparison with men of similar ages, in civil life." He also quotes from the *Social Hygiene Bulletin,* September, 1919, as follows:

> It is usually said that of all the cases of syphilis and gonorrhea among soldiers, five sixths were contracted in civilian life and only one sixth after the men were in uniform. A careful study of all the new cases of venereal diseases at five large cantonments which the Surgeon General's Office has made, shows the army in a still more favorable light.
>
> The cantonments selected were Lee, Virginia; Dix, New Jersey; Upton, New York; Meade, Maryland, and Pike, Arkansas, for the year ending May 21, 1919. During this year 48,167 cases were treated. It was found that ninety-six per cent. were contracted before entering the army, and only four per cent. after. Army officials claim that these figures indicate decisively how easy it is to prevent the spread of venereal diseases when a determined effort is made to do so.

I quite agree that venereal disease can be prevented and ought to be prevented, and that the American efforts, so far as they went, were admirable—particularly in Paris. But the American medical examiners were really not so lax and incompetent as to allow from eighty-five to ninety-four per cent. of the venereal disease cases to slide into the Army undetected. The explanation is that American soldiers were court martialled if they contracted venereal disease, and heavily fined, unless they swore that the disease was a recurrence—that they had had venereal disease before they joined the army. Naturally that is what they did swear. They could not be punished for the mechanical consequences of civil acts. The figures are all right, but the facts on which the figures are based are incomplete and inaccurate.

> From computations based on the report of the Provost Marshal General on the first draft, it appears that there were 445,000 syphilitics and 2,225,000 men infected with gonorrhea among those registered who were not then called,

says Mr. Fielding. If the American doctors detected all these cases, and missed some eighty-five per cent. to ninety-six per cent. of the Army cases, one cannot help wondering if there were any really uninfected young men in America! And are we expected to believe that the Americans as civilians are the most immoral and as soldiers the least immoral of all men? This kind of argument makes the American Medical Service look inefficient and ridiculous, whereas actually it was the most efficient and serious among all the Allied Armies. Similarly the social services connected with the American Army were the admiration of us all—for their unfailing kindness, their broad humanity, their unselfish generosity, and their thorough efficiency. But the tide of racial contamination swept on—arrested practically not at all except by disinfection; and that tide was infinitely worse, as we now know, than can ever be revealed by military statistics.[1] But this standing ground for future efforts is sure:

1. Clean persons can be kept clean by disinfection.
2. Diseased persons can be prevented from spreading contamination.
3. Under civilian conditions all persons desire to avoid venereal infection.

Thus, in spite of the disharmony between the present social and economic conditions and the normal sexual needs of men and women, racial health can be maintained; the rest is a matter of evolution.

---

[1] At the American Red Cross Conference in Paris, in April, 1918, Captain Walker, M. O. i/c British Medical Report Centre, Paris, said that in his opinion there were twice the number of officers concealing the disease than there were reporting it, and that to get at the actual number of infections in other ranks he firmly believed the official figures should be doubled.

Speaking on July 2, 1920, Dr. J. H. Sequiera (of the London Hospital) said:

After the armistice it was well known that there was a large amount of concealed venereal disease in the Army. It was obvious that men would not run the risk of missing early demobilization by reporting that they were suffering from venereal disease. Colonel Harrison demonstrated this in an ingenious manner by what he calls the complication index. It was found that while there was a drop in the number of cases of primary syphilis, which can be concealed, there was a rise in the number with secondary symptoms, which cannot be hidden. Similarly, gonorrhea, in its early stages was not reported, while the proportion of cases with epididymitis, etc., which incapacitates a man, increased in number.

PRESENT AND CONTEMPLATED ANTINARCOTIC LEGISLATION.*

By Thomas S. Blair, M. D.,
Harrisburg, Pa.,
Chief, Bureau of Drug Control, Pennsylvania Department of Health.

In a letter recently received from Dr. Frederick R. Green, secretary of the Council on Health and Public Instruction of the American Medical Association, I find this comment: "It is all right to discuss the question of the treatment of drug addiction and whether or not it is an actual disease. These are purely scientific questions for discussion in technical organizations. The important thing from a social and executive viewpoint, however, is to consider practical methods for controlling the traffic in habit forming drugs. I think we are very well agreed on this and as to the methods which should be followed. I do not, of course, in any way sympathize with the ideas of some of our more extreme members that physicians should be immune from all restrictions. On the contrary, I can see no reason why the physician, as a citizen, should not be subject to the same restrictions for the public good that we are constantly urging on laymen in the form of public health measures; but I also believe that all restrictions on both physician and layman should be the smallest amount necessary to accomplish the desired object. The present method seems to involve a large amount of annoyance with a minimum amount of restriction; what we want is just the opposite.

"The trouble with the Harrison law is that it is a legal evasion. It attempts to regulate traffic in habit forming drugs by means of a revenue measure. It is all right to control the importation of these drugs by Federal taxation but I can see no legal obstacle to placing the distribution, after they are once admitted to this country, in the hands of the United States Public Health Service to distribute through legitimate professional channels to those who have any legitimate need for them, and in such amounts for all proper uses. This, of course, would be a new function for the Public Health Service to assume, yet its supervision and control of serums is very closely analogous to such work."

---

*Read before the Philadelphia County Medical Society, November 10, 1920.

This quotation from Dr. Green is very suggestive, and is in line with recent thought; and the proposition to place the distribution of narcotic drugs in the hands of the United States Public Health Service would render necessary a government monopoly, as it were, in narcotic drugs, none but the government or its appointed agents being allowed to import opium and coca leaves and derivatives and preparations thereof. As these agents are not, in the form of the crude drugs, produced in the United States, it is perfectly feasible to invest the Federal government with this power, and it is a fact that there would not be the difficulty confronting the government that there is in the enforcement of the Volstead act, which aims to control the production, importation, distribution, and use of alcohol and alcoholic beverages.

A governmental report (1) shows that the *per capita* usage in the United States, figuring all educts to an opium basis, is thirty-six grains a year for every man, woman and child in the Union, without taking into consideration smuggled in supplies. It is evident that largely unnecessary supplies are coming into the country. The 1919 report of the Bureau of Drug Control of the Pennsylvania Department of Health shows that the per capita coming into Pennsylvania through legitimate channels on an opium basis was about twenty-four grains a year.

A recent survey of the public hospitals of this commonwealth, and in which all opium educts were figured to an opium basis, shows a per capita consumption in the public hospitals of the state of only about three grains of opium a year; that is, a hospital treating one thousand patients in the year 1919 used for those patients in the course of the year three thousand grains of opium, estimating all educts to an opium basis. This same report showed that the *per capita* usage in the practice of the medical profession at large outside of hospitals was about fifteen grains a year, or five times the *per capita* usage of the hospitals.

Thus it will be seen that legislation to curb the opium and other narcotic menace is necessary, but it is a difficult matter for me to speak on this subject purely from the point of view of Pennsylvania. The menace is a national one, and national legislation is necessary. Furthermore, it is necessary in any present or prospective state legislation so to shape it and its administration and enforcement as to be cooperative with the Federal efforts, as the work is one work, and the Federal and state workers should be fully in harmony.

This is imperatively necessary; first, from the legal point of view, for as regards legislation of parallel nature for the same purpose, Federal legislation takes precedence over state legislation; second, while the law is important, its administration is more important, and there are so many practical points involved in the handling of this problem that little substantial result can be obtained without the utmost of agreement between Federal and State enforcement officers.

I am not at all prepared to say that the Harrison act is insufficient from the point of view of the United States Internal Revenue Bureau; indeed, I feel that from this point of view, the Harrison law is a very good piece of legislation, but from the point of view of the physician, of the retail druggist, the dentist, the veterinarian, and the legal and other persons endeavoring to suppress drug addiction, the Harrison law is insufficient, nor can it be otherwise than such, because of the fact that the Federal power cannot, within a state, exercise the police power that the constituted authorities of the commonwealth can exercise; hence, there is a place for state legislation to supplement the Federal enactment.

A serious effort has been made by the Secretary of the Treasury and the Commissioner of Internal Revenue to patch up the deficiencies of the Harrison law by means of court and treasury decisions and internal revenue regulations. Under the circumstances, a certain amount of this is necessary, but it imposes a great degree of annoyance and bookkeeping upon professional persons handling narcotic drugs, and the propaganda of the American Medical Association, as expressed in the letter of Dr. Green, is the result of much conference with the several interests involved, and in my view, opens up a way of escape from the harshness and annoyance of treasury decisions and internal revenue regulations; in other words, the distribution of narcotic drugs, if placed in medical hands, that is, in the control of the United States Public Health Service, would tend to render unnecessary a large part of the detailed regulations and the bookkeeping and record entries required of professional people; therefore, from the medical point of view, legislation along the lines suggested by Dr. Green is a consummation devoutly to be wished.

Now, from the state point of view, permit some considerations:

The Pennsylvania Antinarcotic Act has now been tried out in practical administration; numerous actions have been brought before the courts, and no marked defects have appeared in this law, which, in the first instance, was very wisely drawn, except that the law, as now on the statute books, does not give sufficient police power to inspectors in the Bureau of Drug Control as regards the service of warrants of arrest and search in the case of the drug peddler and the other criminal elements violating the law. These people have no stated places of business, and unless arrests are made promptly, ofttimes on sight, when violations are witnessed, the evidence is destroyed and the people disappear. It is aimed to correct this weakness in the law at the next session of the legislature. So far as physicians, dentists, veterinarians and druggists are concerned, the law is adequate, as these people have stated places of business, maintain records, and are easily traced, so that in the event of violation of the law they can have explanation made to them, warning served, or in the event of arrest, the usual machinery already provided for by the law is entirely adequate.

I do not see any occasion for a revision of the Pennsylvania Antinarcotic Act except as regards this one thing, namely, increased police power. There is, however, need for control of certain other drugs, more especially hydrated chloral, cannabis, certain ether preparations, such as Hoffmann's drops, Hoffmann's anodyne, and golden tincture, and perhaps to a limited degree as involves some of the synthetic somnifacients. This proposed legislation should be of such character as to be satisfactory to the Pennsylvania Department of Health and to the State Board of Pharmacy, and should be enforced jointly by these two organizations. The matter is now under consideration.

As justification thereof, permit me to say that there is a growing addiction to hydrated chloral, promoted largely by certain proprietary medicines that should not be dispensed except on the prescription of a professional man. There is also a serious menace from ether, especially in the mining regions. The Polish miners drink ether if they can get it, and as that is not usually available, they buy Hoffmann's drops and Hoffmann's anodyne, sold throughout the mining districts in practically every grocery store and a few drug stores. They add this to coffee, becoming intoxicated from the ether and alcohol, and many accidents in the mines have occurred from such intoxication. There is also need to control cannabis for the reason that this drug is added to tobacco and is smoked, more especially in South America, but this menace is reaching the United States, and the smoker usually becomes insane within two years.

The question of the control of synthetic somnifacients involves many difficulties, especially since there is legitimate sale for some of these agents in the drug stores. However, since prohibition, or alleged prohibition, has come, many men accustomed to alcohol are buying veronal and taking it in excessive doses, causing a form of intoxication and stupor that persists for forty-eight hours. A few deaths have occurred in Pennsylvania from such indulgence, and I understand that numerous deaths have also occurred in New York state.

Now, as regards legislation aimed to control or to take care of the drug addict, there is a most admirable habit act on the statute books of Pennsylvania, whereby a judge of quarter sessions can, on due complaint and evidence, commit a drug addict to any proper hospital or asylum for a period not to exceed one year, for care, treatment, and cure. The defect in this law is that no provision is made for indigent addicts, a provision that is made in the law providing for the erection of a state institution for the treatment of alcohol and drug inebriates. Revision of the habit act in conformity with the special act governing the proposed institution has already been prepared whereby the drug addict, if indigent, will be taken care of at the expense jointly of the state and of the county from which he comes.

Now, as regards this proposed institution, the matter is in the hands of a commission, and they have purchased a tract of ground in Cumberland county, 524 acres in extent, and there remains in the treasury approximately $135,000 for the preparation of this ground, the erection of buildings, etc., but no appropriation has been made for the maintenance of the institution once it is built. Plans have been drawn by the engineering division of the Department of Health, which provides for the erection of buildings on this tract that would cost not to exceed $150,000. That is as far as the matter has gone at the present time.

In connection with it, I was instructed to make a survey of public institutions throughout the United States, and I rendered a lengthy and elaborate report on this subject. This report, which aimed to give nothing but facts, was somewhat discouraging, owing to the fact that practically every effort made as regards the conduct of a public institution designed exclusively for the treatment of alcohol and drug inebriates has been a failure, and, at the present time, these special institutions have been closed. There are many reasons that may be assigned for failure, the principal one being incompetent management, due to insufficient salaries being paid to the personnel. Another and a very important reason for failure was that practically all of these institutions admitted persons on voluntary commitment, which has universally been an entire failure. The only form of commitment at all effective is a legal commitment whereby the inmates are brought under absolute control. There are also certain psychological reasons promoting the failure of these institutions, but the greatest one of all is the fact that these people, when cured, as quite a large proportion of them are, almost immediately revert to their habit again, once they are discharged. So far as I have been able to follow up the patients who have been discharged from such institutions as cured, I think I am able to say that ninety per cent. of them lapse within six months. Therefore, there is little encouragement in opening public institutions until after the laws are so drafted and their administration so definite that the great quantities of unnecessary narcotics in the hands of the more ignorant element in the medical profession, and in the hands of peddlers as well, are shut off.

I am obliged to say that comparatively little permanent success has resulted from the treatment of the psychotic class of addicts, except in the psychopathic wards of hospitals for the insane, and there, in Pennsylvania and elsewhere, quite a degree of success has been attained.

I do not wish to be regarded as lacking at all in humanitarianism, but from two years' practical experience in administering the Pennsylvania law I am forced to the conclusion that too much sentimentalism is indulged in as regards the drug addict. The physician sees him only in his personal relationship with him, while the Bureau of Drug Control sees him in his relationship with the almost inevitable two, three, or four doctors treating him at the same time. The physician who has registered the drug addict under Section 8 of the Pennsylvania law is usually honest. The addict rarely is, and I must confess that of the thousands of addicts of various classes registered in the Bureau of Drug Control as under the care of private practitioners, not two per cent. of them have been cured, though a much larger proportion have been reported as cured. These supposedly cured persons almost inevitably appear on our records again, so that so far as the treatment of addicts by the private physician is concerned, I am most pessimistic. There are, of course, a few physicians temperamentally adapted to the handling of these cases, but these physicians are few indeed. The man whose sympathies are practical instead of on the surface, who has a hard fist and controls with a rod of iron the addicts under his care, may succeed. The average practitioner makes a gloomy failure in his efforts to control the drug addict. Therefore, it is no wonder that it is demanded that institutional care be provided for these people.

From my careful study of the situation, I am much opposed to the building of a large and elaborate institution for the exclusive care of drug addicts. I do not think it possible, under present conditions, for such an institution to be a success, for reasons that would require a long paper of itself to elaborate. In general, it may be said that the grouping together of drug addicts in an institution brings about much the same results as their grouping together in any section of a city, and whatever care is provided after they are taken off the drug, which is a very easy matter with the average addict, this care must be of a nature to build them up physically, mentally, and morally, increasing their power of resistance. This involves industrial work, and a life under proper environment. I am, therefore, of the opinion that the special institution provided for should be a small one, largely industrial, the inmates kept under absolute control, legally committed, and arrested and brought back if they escape. Furthermore, I would have committed to such an institution only the hopeful cases, and those who, after hospitalization and being successfully taken off the drug, need a period of building up under proper environment, with a reasonable degree of physical work.

As involves the element congregated in certain sections of our cities, the addicts who are in jail and out again, off the drug and on again, who drift from place to place, committing crime and becoming more and more vicious, this class of persons, in my view, should be put in houses of correction, or work houses, and compelled to earn their way. I am wholly out of sympathy with sentimental views concerning these people. They are a drag on society, worthless to themselves and to the state, and they drift to the cities away from smaller communities where control is more easy, adding to the already vicious element in the slums, and becoming a menace to themselves and society at large. To spend sympathy and large sums of money on these people in the following out of idealistic methods of control is entirely futile. They are a police problem and the municipal police and health officers should cooperate in breaking up all of the nests of vice these people inhabit, putting them under such definite restraint that it will become generally known throughout the vicious element that drug addiction, for which there is no justification from incurable disease existing in the person, is a vice, if not a crime, and will be controlled the same as other vices and other petty crimes.

As involves the legal control of the drug peddler, the federal laws are adequate, but their enforcement is difficult and the personnel employed is altogether too small to accomplish results. With amendment proposed to the state law, we should be able to do more in the future than we have accomplished in the past. My own personal view is, as regards these people, to organize a man hunt, run them down like rats to their holes, dragnet the sections that they inhabit, show them no quarter, hunt them out without fear or favor, and punish every one of them arrested to the full extent that the law permits. It is only by such radical treatment and educating the community to the point of view that these are the lowest and most debased class of criminals, worthy of nothing but the full and rigid enforcement of the law, that we will stamp out this menace. These people are not the class played up in fiction as picturesque characters, brilliant and full of mental resource; on the contrary, they are a debased and sordid lot, cunning to the last degree, unprincipled and full of vicious resource; but with an adequate enforcement of the law, not only by the officers specifically charged with the enforcement of the drug laws but also by every policeman and constable in the state, they can be suppressed, and it is necessary to cultivate public opinion to the point of justifying this sweeping and radical enforcement of the drug laws against this class of people.

REFERENCES.

Traffic in Narcotic Drugs, U. S. Treasury Department. 1919.

403 North Second Street.

SERIOUS EAR CONDITIONS AND COMPLICATIONS IN AMBULATORY PATIENTS.*

By M. Rosenbluth, M. D.,
New York,

Eye Department, Vanderbilt Clinic; Ear Department, Manhattan Eye, Ear, and Throat Hospital; Chief of Out Patient, Ear, Nose, and Throat Department, Lebanon Hospital.

When a life endangering complication develops in the course of a disease, the patient usually becomes too sick to continue as an ambulatory patient; in fact, our suspicion that a serious complication has developed in an ambulatory patient is usually aroused by the fact that, with more or less suddenness, symptoms have appeared that completely incapacitate him and force him to bed. So generally true is it that dangerous complications announce their presence by making the patient very sick that not only the layman but also a large proportion of medical men often fail to suspect or recognize their existence, just because the patient is walking about and does not complain very much or at all. The ear, more than any other organ of the body, is prone to the development of grave complications with which the patient may still be up and about, in constant danger of losing his life as a result of it. Many patients die every year from such complications which were either never recognized at all or recognized too late, or were only accidentally discovered at the autopsy. Many of these patients might have been saved if the condition had been recognized in time, when proper treatment could still have been effective. For that reason it is important for us to do two things: First, recognize that there are many such serious life endangering ear complications that may exist in patients who are still walking about. Secondly, acquaint ourselves with all symptoms that point to or even faintly suggest the development of such a complication, so that by timely intervention the patient's life may be saved.

---

*Read before the Bronx County Medical Society, February 18, 1920.

These complications can be divided, on an anatomical basis, into three groups, as follows: 1. Those developing in the middle ear and mastoid, including the venous sinuses; 2, those developing in the labyrinth; 3, those developing in the brain, including meninges.

MIDDLE EAR COMPLICATIONS.

Cholesteatoma.—This is the name given to the mass of débris made up in the cavity of the middle ear, consisting of broken down bone, epithelial cells and secretion, with cholesterin crystals. As this mass grows it causes the absorption of the bony wall of the middle ear cavity against which it presses. In this way it may break through the tegmen tympani and produce intracranial complications, i. e., meningitis or brain abscess; or, by producing absorption of the bony capsule of the labyrinth it may produce a fistula in the labyrinth or an acute diffuse labyrinthitis; or it may produce a sinus phlebitis through caries or necrosis of the sinus plate of the temporal bone. They may exist for years without any symptoms, or may produce a feeling of heaviness and pressure on the corresponding side of the head, headache, and dizziness, without the presence of any acute inflammatory phenomena. The diagnosis is made positive when, on microscopical examination, the small gritty lumps that come away in the irrigating fluid are found to possess the characteristic cholesteatomatous appearance and structure. Treatment is radical mastoidectomy.

Facial paralysis.—Facial paralysis of otitic origin is next to be considered, not only because to the patient it is a very serious matter when half the face is paralyzed, but also because when this paralysis is of otitic origin, it is sometimes the expression of a very serious bone necrosis taking place in the middle ear. For that reason when a facial paralysis occurs in a person who has a chronic running ear, it is very important to determine whether it is of the ordinary rheumatic type, which is not dangerous to life, or whether it is of otitic origin, when it is the expression of a life menacing pathological condition.

The differentiation can nearly always be made by doing a caloric test on the labyrinth of the suppurating ear. If it is of otitic origin, the labyrinth will be "dead" and nonfunctionating, so that douching the ear with cold water (68° F.) will not produce nystagmus to the opposite side, nor with warm water (110° F.) produce nystagmus to the same side, because on account of the close proximity of the semicircular canals, particularly the horizontal one, to the horizontal portion of the facial canal, the labyrinth has nearly always been destroyed by the same process of bone necrosis that has produced the facial paralysis. The indication is for a thorough radical mastoid operation plus labyrinthectomy. In contradistinction, a facial paralysis occurring with an acute middle ear condition is not of grave significance. It is then generally due to a dehiscence in the bone of the facial canal, and disappears with the subsidence of the middle ear condition.

Bone necrosis.—This is another serious condition. Its existence can be supposed when, in a running ear, there is the development of pain, most intense at night, persistent foul discharge, and granulations. The diagnosis is positive if carious bone can be seen or felt with the probe, or sequestra are discharged. These sequestra not infrequently are made up of one or more ossicles, portions of semicircular canals, or cochlea. Such a process often leads to intracranial complications and calls for a thorough radical mastoidectomy, if the labyrinth is still uninvolved; if it is involved, a labyrinthectomy must also be done.

Mastoid complications.—A subperiosteal abscess may exist in a patient who is still ambulatory, and even an acute mastoiditis may develop with little disturbance to the patient throughout the whole course of its development. In chronic running ears chronic mastoiditis not infrequently occurs, where at operation the mastoid is found infiltrated with pus or granulations, or is sclerotic. These are dangerous conditions, because they may give rise to sinus thrombosis, meningitis, brain abscess, or labyrinthitis.

Sinus disease.—In connection with the sinus, the patient may be walking about with a perisinous abscess, presenting only a few symptoms of a mild grade of infection, or no symptoms at all, when, as often happens, the sinus is protected by a thick wall of granulation tissue. A swelling of the mastoid over the region of the emissary vein, when present, is characteristic. Sooner or later it will invade either sinus or cerebellum, or both, if not attended to. Besides this, patients sometimes walk about with actual sinus thrombosis, with chills and fever, and such cases have been incorrectly treated for malaria or miliary tuberculosis.

LABYRINTHINE COMPLICATIONS.

Labyrinthitis.—Perilabyrinthitis and circumscribed labyrinthitis may manifest themselves in attacks of dizziness; or there may be a labyrinthine fistula which also is marked by attacks of dizziness, but where, in addition, the fistula test is positive, a nystagmus being produced by a sudden increase of the air pressure in the middle ear.

Then there may also exist a latent diffuse suppurative labyrinthitis, where, although the patient has no symptoms, the diagnosis can be made from the fact that the patient has total end organ deafness and that the static labyrinth gives negative reactions to the caloric test. The existence of this condition is very dangerous. Latter day knowledge of this subject has taught us that it very frequently is responsible for meningitis or brain abscess, and also that many of the cases of meningitis that formerly seemed to develop in some obscure way and carried off the patient after a mastoid operation, were the result of the extension of this latent suppurative process in the labyrinth to the meninges. Nowadays, every careful ear surgeon does a caloric test on the ear to be operated on for radical mastoid, to determine the existence of labyrinthine reactions in the ear and thus exclude the existence of a latent suppurative process in the labyrinth; if this test elicits no reactions from both the horizontal and vertical canals of the ear about to be operated upon, a radical mastoidectomy would be insufficient; a labyrinthectomy would also be necessary.

BRAIN COMPLICATIONS.

Abscess in the brain.—In connection with the brain there may exist in ambulatory patients, either an abscess in the cerebrum or a cerebellar abscess. Their existence may never be known when of small size, or sometimes even when of fair size, until accidentally discovered at autopsy after the patient has died either from some other disease or from rupture of the abscess into the subdural space or ventricles. At other times the patient may walk around with symptoms directing suspicion to the existence of an abscess in the brain, as, for instance, headache, various degrees of change in the appearances of the disc, usually neuritic in type, and more frequent in cerebellar than in cerebral abscess; and in cerebellar abscess also nystagmus, ataxia, and interference with the normal pastpointing reaction, on testing the labyrinth, in the extremities of the same side as the affected cerebellar hemisphere. In such patients we may be able to get the corroborative history of the initial stage or stage of development some time back. Macewen states that at this stage there is always a chill or rigor, high temperature and severe headache. The symptoms are of short duration, the fever and headache subsiding in a few days, leaving the patient in good condition, or perhaps immediately followed by symptoms of intracranial pressure. This stage is unquestionably often supposed to have been la grippe.

Meningeal involvements.—In the meninges the following conditions may exist in an ambulatory patient: Chronic pachymeningitis, whose existence is discovered at autopsy when the patient dies from an extension to the pia or from some other disease; extradural abscess, when sacculated, the diagnosis is very difficult or impossible. A helpful point is the coming and going of threatening symptoms of meningeal irritation after a sudden discharge of a large quantity of pus from the ear. If left to itself, it produces fistulæ in the dura with leptomeningitis running a rapidly fatal course. Pachymeningitis externa: By this term Politzer designates the condition observed in large perforations of the tegmen tympani and confined to the outer surface of the dura. It really does not differ from an extradural abscess. It may exist without any symptoms. One finds, sometimes, at the radical operation, quite extensive areas of the dura of the middle cranial fossa lying freely exposed and covered with thick granulations or exudate without any previous symptoms of meningeal irritation.

These are the serious ear conditions and complications that may exist in a patient who is still up and about. Perhaps some other conditions might also properly have been included under this heading. Of course no attempt was made to draw a complete clinical picture of the way in which every condition mentioned presents itself at all times. When present, many of these conditions frequently, and some generally, produce such marked symptoms and make the patient so desperately sick that it is inconceivable for the condition at such time to be unrecognized or at least suspected. It is the intention of this paper to call attention to the fact that so many serious ear conditions and complications may exist with little or no disturbance to the patient, and to call attention to those few symptoms when present at such time, a recognition of which will help diagnose or direct suspicion to the existence of the condition which may often mean the saving of a life. And because so often patients with these conditions do not connect the symptoms with their ear condition and apply to the general practitioner for relief, it is the duty of the general practitioner to acquaint himself with the symptoms of these conditions in the ambulatory patient, so that he may not overlook their existence. He should also always bear in mind that a patient who has a chronic running ear presenting symptoms of whatever nature, unless very evidently accounted for by some disease entirely unconnected with the ear, is safest in the hands of an otologist trained to recognize this condition and its complications.

31 East Seventy-second Street.

WOODY OR LIGNEOUS PHLEGMON OF RECLUS.*

With a Report of Two Cases Occurring in the Thigh.

By John J. Gilbride, A. M., M. D.,
Philadelphia, Pa.

Reclus in 1893 first described a hard swelling that occurred in the neck, and in his publication he reported five cases of what he called woody or ligneous phlegmon. Woody phlegmon is a chronic inflammation affecting connective tissue, fascia and muscles. It is characterized by extreme hardness which shows little tendency to suppurate.

While in the cases reported by Reclus the phlegmon occurred in the neck, that author stated that the condition could occur in the right iliac fossa. In three cases reported in the literature it occurred during the course of chronic appendicitis. One of the patients, whose history I shall give, had chronic appendicitis. Appendectomy was performed, which was followed in six months by woody phlegmon of the left thigh and this in turn was followed by acute osteomyelitis of the right femur. Many, if not most, of the cases reported in the literature are those where woody phlegmon occurred following operation. This latter aspect of the disease has been described and a full bibliography given by W. W. Grant, of Denver, Col. (1). Fasana (2) records cases where the disease occurred in the foot and in the gluteal region.

Previous ill health and trauma are predisposing causes and the disease occurs generally after middle life. However, a number of cases have been reported where it occurred in individuals fifteen or twenty years of age. The exciting cause is infection with or without trauma. Bacteriological examinations made in these cases have shown that many varieties of bacteria have been reported present, all of attenuated virulence.

---

*Read before the Philadelphia County Medical Society, November 26, 1919.

Duse (3) reports the case of a boy fifteen years of age, in whom woody phlegmon occurred in the left upper abdominal quadrant two and a half months after an infected herniotomy wound had healed, and records the following observation: Incision was made the full length of the growth; no pus was found but a pale rose colored fluid was discharged. Tissue removed for histological examination showed inflammatory new growth with some leucocytes and many plasma cells. Cultures showed small, white gram negative staphylococci which produced no effect on animal inoculation. The patient left the hospital with general and local conditions unchanged. The author states that in previous studies the following bacteria have been reported, namely, Klebs-Loeffler bacillus, pseudodiphtheria, streptococci, bacillus proteus, staphylococci, white and yellow, all of attenuated virulence.

Todd, of St. Joseph, Mo., has reported a case of woody phlegmon that occurred in the abdominal wall of a young woman. It was supposed to be due to a fall in 1909. This tumor of boardlike hardness was first observed in March, 1910. An operation was performed, removing the central part of the tumor on May 16, 1911, with no appreciable improvement. The patient had lost twenty-one pounds in weight in one year. On account of the loss of weight and her weakness a diagnosis of sarcoma had been made, which later proved to be an error. The pathological report showed inflammatory changes in the muscle with a large amount of granulation tissue lymphoid plasma cells and polymorphonuclear leucocytes, complicated with tiny abscesses. Charles A. Powers, of Denver, Col., has described this condition (5).

The onset of woody phlegmon is gradual and its progress is slow. A hard, indurated swelling is noticed, which progressively extends. Its outline is sharply defined, but, according to Fasana (2), it may be diffuse or nodular. The usual signs of acute inflammation are absent. Swelling is present, but there is no redness of the skin, little or no pain or tenderness, and fever is slight or absent. The skin is involved late, if at all, in the course of the disease. The hardened indurated area increases very slowly over a period of months or even one or two years. Its occurrence in the neck is of more serious import than when it occurs elsewhere in the body. This is true not only on account of the complications which may arise in the neck, but also on account of its extension. There is little tendency to suppurate, which would be the most fortunate outcome in terminating the case.

Both of my patients believed they had rheumatism. The masses were not connected with the bone, periosteum, or skin; lymphatic involvement was not demonstrable. Grant says the lymph nodes are not usually affected. Fasana (2) uses the term hyperleucocytosis, and says that its presence is in favor of a diagnosis of phlegmon. In the early stage of this condition it has been mistaken for cancer or sarcoma. The possibility of lues, actinomycosis, and tuberculosis, must also be borne in mind. One can readily appreciate the difficulty of making a differential diagnosis between woody phlegmon and sarcoma. This is especially true in cases in which the onset has been insidious, or where there has been a history of trauma. The cases which follow operation should be less confusing. The histories of my cases are as follows:

Case I.—Female, white, married, fifty-one years of age, born in the United States, housekeeper by occupation. She consulted me on January 3, 1917, because of pain in the right thigh and leg, which was increased by walking. Her previous history was negative, except that she had had an attack of acute appendicitis in September, 1916, and was confined to bed for one week. Her bowels were constipated, and "she always had a bad stomach." Pain in the right thigh was worse at night. Physical examination did not show any tenderness over the course of the anterior crural or obturator nerves; the posterior branch of the latter pierces the capsular ligament and sends branches to the knee joint. Neither was there tenderness along the course of the sciatic nerves. Full extension of the right leg and thigh caused slight pain in the right lower abdomen. There was tenderness at McBurney's point. Urine was negative, blood pressure 130 mm. systolic, 80 mm. diastolic. A diagnosis of chronic appendicitis was made. I performed an appendectomy on the patient at the Medicochirurgical Hospital on January 27, 1917; recovery was uneventful.

The patient consulted me again on October 10, 1917, complaining of a large mass in the inner side of the left thigh. Her attention was first called to this condition by the presence of slight pain in the left thigh in June, 1917. Later in September and again in October of the same year she had been under treatment by her physician for rheumatism. The mass in the thigh had been increasing in size and caused her some alarm. On examination I found a large swelling, nearly twice the size of my fist, in the inner side of the left thigh. The mass was slightly movable and nowhere adherent. The skin was normal in color. I made a diagnosis of chronic inflammation, bearing in mind the possibility that the mass might be malignant, i. e., sarcoma. There was no sign of suppuration. The patient hesitated about permitting an operation. However, she later consented, and on October 27, 1917, a deep incision was made into the mass. There was no pus, only a dark brown bloody fluid; the wound was packed and dressed antiseptically. A culture taken from the wound showed staphylococcus pyogenes aurens. The mass gradually diminished in size. About November 10, 1917, she began again to have pain in the right thigh and leg. The pain was only intermittent at first, but later it became almost constant. She improved in a few days, and on November 15, 1917, the patient was able to be up and about the house, but on November 27, 1917, she was again confined to bed on account of the severe pain in the right thigh. The right femur, especially over the lower end of the shaft, was tender to pressure. Her temperature at that time was 101° F., and there was an increase in leucocytes. A diagnosis of acute osteomyelitis of the right femur was made and operation advised, but the patient refused to give her consent until December 16, 1917, when I operated on the right femur at the Medicochirurgical Hospital on December 17, 1917. A small abscess containing about a fourth of an ounce of pus was exposed at the junction of the lower and middle third of the right femur. Culture from the abscess showed Staphylococcus pyogenes aureus. Recovery was slow; the wound healed by February, 1918.

An autogenous vaccine was made and used in her case. She has since remained well. Since the appendectomy she has not had any further trouble with her stomach and she also said that the headaches from which she had suffered several times a week for years past had also disappeared.

Case II.—Female, white, married, aged thirty-five, born in the United States, housekeeper. She consulted me on July 15, 1917, stating that about two months before she had noticed a swelling in the right thigh, which had been gradually getting larger, so that she had difficulty in walking. She was a rather delicate woman, and poorly nourished. Examination of the mass in the thigh showed it to be about the size of an orange. The color of the skin was normal. The mass was movable, slightly tender, and nonadherent. None of the signs of acute inflammation were present, and there was no lymphatic involvement. The mass was incised and drained. Culture showed staphylococcus pyogenes aureus. In the course of two weeks the mass had disappeared. Before the operation I gave her an injection of ten thousand units of diphtheria antitoxin. She also was given an autogenous vaccine.

Case III.—Female, white, aged thirty-six years; married, no children, housekeeper by occupation; born in the United States. She was referred to me in February, 1901. She had a hard, boardlike, indurated mass in the left lower abdomen, involving the abdominal wall and extending into the left iliac fossa. It was regular in outline and there were no signs of acute inflammation. The woman was pale, weak, and very poorly nourished. She had lost about twenty-five pounds in weight during the previous three months. Her appetite was poor and her bowels were constipated. There was a slight elevation of temperature—99.2° F.—pulse rate 84 a minute; uranalysis was negative; hemoglobin seventy-six per cent. (Dare). Pelvic examination showed that the uterus was not involved. Although at that time I did not know anything about woody phlegmon, I made a diagnosis of inflammatory induration due to a low grade infection and probably having its origin in the sigmoid flexure of the colon. I expected on making an incision to find pus deeply situated, but did not discover any foci of suppuration. I then concluded that the mass was malignant. However, after subsequently learning something about woody phlegmon, I was satisfied that this was the correct diagnosis. The patient had been confined to bed for six weeks before I saw her; she died five weeks later; no autopsy.

TREATMENT.

Extirpation may be attempted, if practicable, but it is rarely practicable. In the event of being unable to extirpate the mass, free incisions should be made into the mass, also around its periphery. These latter incisions are made for the purpose of limiting the extending area and also as an aid in promoting absorption. In these cases hot, moist antiseptic dressings should be used, and over the dressings a hot water bottle applied, which should be changed at frequent intervals. An autogenous vaccine should be made and injected. One should give special attention to the hygienic, dietetic, and medicinal treatment, as these patients are usually in a weakened and poorly nourished condition. Preparations of iron and arsenic are valuable. From what we know of this disease, its course is very prolonged and the disease may be serious, especially when the neck is involved. Should I encounter another case of woody phlegmon I shall employ blood transfusion, which I believe would be valuable. I injected diphtheria antitoxin in one of these patients and it brought about a marked improvement. The disease appears insidiously; it follows operations, especially abdominal operations, and it may be caused by the presence of a foreign body.

REFERENCES.

1. Grant, W. W.: Ligneous Phlegmon of the Abdominal Wall, *Journal A. M. A.*, April 5, 1913, p. 1039.
2. Fasana: *Gazetta degli ospedali e elle Cliniche*, October 20, 1912, p. 1345.
3. Duse: Contributo ullo Studio del flemmone lignes di Reclus, *Gazetta degli ospedali e elle Cliniche*, 1910, xxxi, p. 625. Quoted by Grant.
4. Todd, Luther Anson: Obscure Infiltration of the Abdominal Wall, *Journal of the Missouri Medical Association*, February, 1912.
5. Powers, Charles A.: Woody Phlegmon of the Neck of Reclus, *Journal A. M. A.*, July 29, 1911, p. 365.

1934 Chestnut Street.

TRAUMATIC INTRAMUSCULAR OSSIFICATION.

By Russell F. Maddren, M. D.,
New York.

The term traumatic intramuscular ossification was first used by Morley (1) in reporting a case of what is often called traumatic ossifying myositis. Morley took exception to the old name because it implied an unfounded pathology for this interesting lesion, and in his article he brought forward experimental proof of the correctness of his clinical deductions. Traumatic intramuscular ossification is the rather uncommon sequence of a single severe contusion. In not one of the two hundred cases collected by Shere (2) was there any break in the skin. It should be sharply differentiated from true myositis ossificans of the progressive type that starts early in life, usually in the muscles of the neck or back, and progresses irregularly and intermittently. There is also a third type of muscle and tendon ossification which is the result of slight but frequently repeated trauma.

REPORT OF A CASE.

History: On March 31, 1920, S. M. (No. 293), aged twenty-five, a blacksmith's helper, reported to me, complaining of lameness and severe pain in his right leg. He said that while holding a heavy swage under a steam hammer his hands had slipped just as the hammer came down. The handle of the swage, torn from his grasp, struck him so forcibly on the front of the right thigh that he was felled. He got up unaided and was able to bear his weight on his right leg, but walking caused severe pain.

Examination: There was an area of tenderness at the lower anterior part of the right thigh, and some swelling. Partial or complete fracture of the femur was ruled out by the use of the fluoroscope and by comparative mensuration of both legs. Diagnosis, contusion.

Course: The man was transported to his home and treated there until April 8th. The treatment used was rest, elastic compression, and first cold and subsequently hot applications. Both the pain and the lameness gradually disappeared, and on April 8th the patient returned to his work. He was discharged, cured, on April 12th.

Second examination: On April 28th, S. M. reported again, complaining of pain in his right thigh and inability to flex the knee completely. There had been no additional trauma. Upon examination a firm, sensitive, immovable mass about the size of an egg could be distinguished. It appeared to be growing from the femur about six inches above the patella and a little to the outer side. His temperature was normal. Tests and examinations for tuberculosis and lues were negative. A skiagram showed a mass of new bone three and a half inches long by one and a half inches thick, at about the middle of the femur, but the picture did not appear to be that of ossifying periosteal sarcoma. A print of the x ray plate was submitted to Dr. James Ewing, of New York, who said that he did not think the lesion was malignant. He advised against excising a part of the mass for microscopic diagnosis.

Course: For ten days cacodylate of soda was given subcutaneously every other day in increasing doses. Commencing on May 3rd, x ray treatments were started and repeated twice a week in as heavy doses as was considered safe, and at the same time the patient was put upon potassium iodide three times daily. Probably this treatment had very little effect upon the lesion. The man was kept very quiet at home until June 7th, by which date tenderness had almost disappeared and he returned to light work. Passive motion was gently forced every day and he was encouraged to exercise his leg. Another skiagram on June 28th showed approximately the same condition that had been found previously. The mass was no larger. By the middle of July the leg could be flexed to a right angle and the man was working regularly at his trade of blacksmith's helper.

PATHOLOGY.

Morley called attention to the fact that under certain conditions a severe blow might loosen the periosteum from its bony attachments, lacerating and contusing it in the process. In his original article he showed pictures of traumatic intramuscular ossification experimentally produced in the rabbit. At the same time that the periosteum is injured the overlying muscle is contused and some of its fibres are torn. Bleeding occurs from the denuded bone and torn periosteum, and osteoblasts in a free and possibly ameboid state pass out from the bone and find in the mixture of pulped muscle and extravasated blood an almost ideal culture medium wherein they thrive and produce new bone. The mass of new formed bone may be small or may be so large as to occupy almost the entire muscle in which it lies. In Outland and Clendening's case (3) the area of ossified tissue measured ten inches by three inches by two inches.

BIOLOGY.

In the records of the German Army over a period of ten years, Schultz (4) found 233 cases of traumatic intramuscular ossification. The most interesting and curious fact that his research brought out was that, of these cases, in all but three the lesion was either in the quadriceps femoris or brachialis muscles. (Of the three exceptions, two were in the masseter and one in the pectoralis major.)

The highly specific localization exhibited in these cases is probably due to the fact that nowhere else in the body except in these two particular places can there be found a considerable area of easily detached periosteum overlaid by a thick pad of muscles. Murphy (5) points out that in both of these regions there is a "broad, smooth, convex area of bone, covered by periosteum, that is loosely attached and readily srtipped off owing to the absence of tendinous insertions."

DIAGNOSIS.

According to Bloodgood, myositis ossificans seen before bone begins to be formed can only be differentiated from sarcoma under the microscope. It is improbable, however, that a patient could be induced to consent to disarticulation at the hip joint a few days after having bruised his thigh however severely. A month or more after the injury the character of the lesion can be better established by a skiagram than by a microscopic section.

Occasionally severe contusions are followed by an aneurysmal type of sarcoma, but these cases usually present such a striking clinical picture that they could not be confused with anything but fulminating osteomyelitis, which they simulate exactly until pulsation becomes palpable. I have seen one such sarcoma prove fatal in twenty-eight days from the original injury.

Socalled rider's bone and the ossific deposits sometimes found in the deltoid muscles of infantry soldiers are both the results of frequent slight mechanical irritation and are true occupational diseases.

In the progressive type of ossifying myositis, the first complaint may have been of painful swellings in the muscles of the back, neck or thorax, but the differential diagnosis is usually very easy. According to DeWitt (6) and others, seventy-five per cent. of such cases show microdactylism. This peculiarity, first noted by Helferich in 1879, was not present in the only case of the multiple progressive type that I have had the opportunity of studying.

TREATMENT.

Unless serious disability exists and persists unimproved by active and passive exercises, surgery is contraindicated. In 1905, R. Jones (7) advised operation in all cases of traumatic intramuscular ossification, but in a letter to Rickman Godlee (8) in 1911 he said: "The simplest looking mass in the bend of the elbow is a difficult problem to deal with surgically, and more than once I have wished that I had let it alone."

If operation is decided upon, the physiology of bone must be remembered. Simple excision is almost certain to be followed by recurrence, because the normal periosteum has been torn loose and no longer fulfills its function as a limiting membrane for osteoblasts. In Morley's case there was a recurrence in three weeks. At the second operation he successfully transplanted fascia lata onto the denuded bone to prevent adhesions between bone and muscle and to form an artificial limiting membrane.

If not operated upon, the mass usually ceases to grow after a time and may even become smaller, owing to reabsorption of bone similar to that seen in some cancellous osteomata (9). Treatment with radium, the röntgen ray, or potassium iodide, may possibly accelerate this process of consolidation, and does no harm if carefully controlled. The patient should be encouraged to exercise in an attempt to restore the normal range of motion. Very frequently vigorous exercise leads to complete functional recovery after a considerable lapse of time.

REFERENCES.

1. Morley, J.: Traumatic Intramuscular Ossification, *British Medical Journal*, xi, 1475-77, December 6, 1913.
2. Shere, O. M.: Myositis Ossificans Traumatica, *Journal A. M. A.*, lxv, 1012-6, September 18, 1915.
3. Outland, J. H., and Clendening, L.: Recurrent Myositis Ossificans Traumatica, *Interstate Medical Journal*, xxii, 2, 1093, November, 1915.
4. Schulz, H.: Ueber Myositis ossificans in der Armee, 1897-07, *Deutsche Militärartzl. Zeitschrift*, xxxix, 4, 129-45, 1910.
5. Murphy, J. B.: Traumatic Intramuscular Ossification, *Surgical Clinics*, vol. v, No. 4, 765-771, 1916.
6. De Witt, L.: Myositis Ossificans, *American Journal of the Medical Sciences*, cxx, 295, September, 1900; Nicolaysen: *Norsk Magasin für Lagevidensk*, xv, 4, 1900.
7. Jones, R.: *Archives of the Röntgen Ray*, 1905 (cited by Godlee).
8. Godlee, R.: Myositis Ossificans, *Proceedings of the Royal Society of Medicine*, Series of 1910, 154.
9. Battle and Shattock: Cancellous Osteomata, *Proceedings of the Royal Society of Medicine*, Series of 1908, 83.

616 Madison Avenue.

Specific Diagnosis and Treatment of Acute Lobar Pneumonia.—Lesley H. Spooner (*Boston Medical and Surgical Journal*, February 26, 1920) says that thirty per cent. of the cases of acute lobar pneumonia are due to Type I organism. An immediate diagnosis of type is essential for the early administration of specific sera. The use of polyvalent sera is irrational and unjustified. Careful use of Type I serum in Type I pneumonia is safe, and has reduced the spread of the disease process and the mortality to a sufficient extent to indicate its universal application.

PROCTOLOGICAL EXAMINATION AS AN AID TO GENERAL DIAGNOSIS.

By Arthur A. Landsman, M. D.,
New York,
Associate Surgeon, Diseases of the Rectum, Post-Graduate Medical School and Hospital; Attending Rectal Surgeon, Jewish Memorial Hospital; Deputy Surgeon, Diseases of the Rectum, Out Patient Department, New York Hospital, etc.

The full objective of a local examination is not attained by the determination of abnormality or disease in a suspected organ or area, or its exclusion therefrom; if such an examination is to fulfill its best purpose, it must not end with the local findings, but should, if possible, serve as an additional means of investigation of the disturbance, no matter where located. That certain general conditions produce definite and characteristic changes in remote organs not primarily concerned in the disease must be admitted. The well trained ophthalmologist may readily detect the presence of some general conditions by an examination of the eyegrounds; indeed, he may thus be able to throw some light on the nature of the disturbance and even estimate its prognostic importance.

While this may not apply in a like measure to all organs, it would seem reasonable to suppose that a profound systemic disturbance would leave impressions upon an essential organ which may be interpreted in terms of diagnosis because of their frequent association with definite pathological lesions elsewhere in the body. It is our firm belief that the science of proctology may at times be so utilized as an aid to diagnosis of general diseases, obscure and otherwise, by the discovery of changes in and about the anorectal parts, which may be regarded in some cases as pathognomonic of particular diseases, in others at least strongly presumptive of their presence.

The first of these which suggests itself in this connection is syphilis, which has superior claims because of its importance as a social problem entirely aside from what we know of its ill effects upon the health and well being of the human race. It is particularly true of this disease that early diagnosis is the means of preventing potential injury, in proportion as its delayed recognition spells disaster. Hence anything which may aid us in discovering its presence as early as possible must be a welcome addition to our defensive forces; and it is an indisputable fact that careful proctological examination has more than once resulted in uncovering evidence from which a tentative diagnosis of syphilis has been made and confirmed later by the development of unmistakable symptoms.

The primary lesion of syphilis is very rare indeed about the anus and rectum, but when it does occur it is well to remember that it may fail to show its usual characters because of the physical conditions which exist in this region, having a tendency to modify and blur the classical picture (1) as the proctologist sees it. The anorectal chancre may take the form of multiple fissures or ulcers between the radial folds, with hypertrophy of the skin, maceration of the superficial epithelium, offensive discharge, and a swelling of the inguinal lymph glands. Simple nonspecific anal fissure does not generally exhibit these symptoms, hence in their presence the possibility of lues must be given serious consideration, even in the absence of clinical signs which are known to occur in genital chancre.

We had the opportunity of seeing one such case in a married woman who presented herself for treatment in our clinic for acutely painful radial ulcers at the anal margin, for which she had received prolonged medical treatment without any marked success. Although they possessed the characteristics described above, which should have directed our attention to the true nature of the trouble at once, it remained unrecognized until some weeks later, when successive confirmatory symptoms made the diagnosis clear and led to admissions by the patient which disclosed the mode of the infection.

Oval patches of macerated skin on the opposing surfaces of the buttocks, close to the anus, may occur as anorectal symptoms very early in the disease, sometimes the only gross evidence of it. They are the socalled broad based condylomata, generally regarded pathognomonic of lues, and so distinctive in appearance that, once seen, their significance will not be easily overlooked. They are, however, not the only type of condylomata found about the anorectal region; the acuminate variety, which are excrescences of the skin—histologically, pure papillomata—occur with relative frequently, but have been generally held to be nonspecific. In an admirable study by Creadick, of Yale (2), ten out of twenty gave a strongly positive Wassermann reaction, and we may yet have to revise our opinion concerning their etiology.

The deposit of plastic material in the rectum which results in the thickening of the wall and narrowing of the lumen, produces characters which, if not specific, are strongly suggestive of syphilis. Strictures of luetic origin are firm, smooth, and inelastic, with a tendency to become annular and to infiltrate the gut to a considerable extent. They form a large percentage of all strictures of the colored race.

Occasionally the presence of nonspecific anorectal disease may indirectly lead to the discovery of lues in a person who never presented any evidence of it, as it did in one of our cases. The patient, a married woman with a negative history (3), came into the hospital for treatment of a chronic purulent rectal discharge which was found to be caused by a blind internal fistula. An operation was advised and attempted under local anesthesia. The manipulations disclosed a striking diminution of the pain sense in the tissues about the anus, below the lower half of the sacrum, to such an extent that they could be cut without the use of any anesthetic. A neurological examination disclosed changes in the deep reflexes and pupillary phenomena which resulted in the establishment of a diagnosis of incipient tabes, based upon an old syphilitic infection.

In another case, the patient, a woman, was sent to the hospital on account of recurrent attacks of severe bleeding of the rectum, complicated by loss of control of the bowel. The anal canal and rectum were relaxed to such an extent that they could easily be held open and inspected without the use of any instrument, and offered no resistance to the introduction of the finger. The skin surrounding the anus was moist and eczematous, the hair absent, the anal opening deep, sunken, fissured and funnel shaped, the mucous membrane ulcerated and bleeding. A diagnosis of ulcerative proctocolitis was made secondary to pederasty, which was indignantly denied by the patient. However, her family physician gave the information later that she admitted unnatural coitus in an effort to prevent pregnancy (4).

But syphilis is not the only disease which produces recognized changes about the anorectal region; in tuberculosis we have another which is responsible for more or less characteristic symptoms in the form of lesions which may be identified as a part of the specific process. In most instances tuberculosis is not primary about the anus and rectum, but appears as a secondary infection from a focus elsewhere in the body. But whether primary or secondary, soon enough it assumes clinical appearances which leave little doubt to the experienced eye as to its true character. Of the lesions which are best marked, ulceration about the perianal tissues, anal canal and rectum, and fistula in ano stand out prominently and present distinguishing features clearcut and impressive. Ulcerations about the anus may either begin in the skin around it or follow by direct extension of the process from the lower portion of the anal canal, especially in persons with pulmonary tuberculosis, active or latent. They present to the naked eye shallow, irregular, uneven lesions with a wormeaten base and thin undermined edges, a description which applies equally to ulcers of the mucous membrane, where, however, the question of differential diagnosis between tuberculosis and malignancy is often puzzling. In the latter condition the ulcers have a tendency to become deep and craterlike, with raised edges and hard borders, imparting to the palpating finger the sensation of a firm, hard infiltration, altogether absent in lesions of tuberculous origin. Tuberculous fistula follows abscess about the anorectal region, which is caused by the tubercle bacillus or invaded by it secondarily.

When it occurs in persons who present obvious signs of pulmonary tuberculosis, the diagnosis suggests itself readily enough and errors will be avoided; but in a certain number of cases the fistula is the first and, for a time perhaps, the only manifestation of the constitutional infection, in an individual who may present no frank signs of ill health. A tuberculous fistula, while it may for a time show no local signs of its true character, will sooner or later develop marks which will serve to distinguish it from the nonspecific variety (5). The external opening is relatively large, its mouth gaping and ragged, its borders bluish and undermined in every direction, and the surrounding skin presents every evidence of poor nutrition. Moreover, the parts soon begin to show the wasting incident to such a grave systemic infection: the buttocks lose their rounded contour and become flattened, the bony landmarks prominent, the anal cleft deep and sunken, the hair silky and long, the skin dry and scaly—changes which should at once arouse a strong suspicion that the fistula may be merely the local manifestation of a constitutional disease.

Any prolonged resistance to the free return of blood into the liver, whether from within or without, will in time cause dilatation in the course of the vessels as a compensatory process, despite the fact that under these circumstances a greater proportion of the blood from the rectal veins must be returned to the general circulation by way of the vena cava; hence it is quite clear that a diagnosis of hemorrhoids is incomplete without an attempt to establish the underlying cause. This must suggest itself in such diseases as tumors and infections about the pelvis, malpositions and new growths of the uterus and adnexa, pathological processes anywhere in the course of the vessels which interfere with the circulation, or diseases of the liver, such as hepatic cirrhosis, which obstruct the free flow of blood through it. Carried a step further, any long continued disease of other organs which causes a congestion of the hepatic circuit will secondarily produce interference in the portal circulation and may result in symptomatic hemorrhoids. Hence their frequent association with chronic gastric, cardiac, and nephritic affections.

In normal health the rectal sphincters are in a state of tonic contraction and the anal opening is closed, more perfectly in the young and vigorous than the aged and feeble, to the extent that the introduction of one finger is all they will bear without painful reaction. Operators who are especially skillful may be able in some subjects to stretch the sphincters under careful local anesthesia, but it is the general experience that to dilate them thoroughly the patient must be deeply narcotized. In persons who suffer from spinal and cerebral disorders, however, which interfere with the innervation of the sphincters, there may be an abnormal relaxation of these structures which should at once call attention to a possible disturbance of nervous origin; the same may be said of fecal incontinence as a symptom when it is not due to local disease or to a postoperative complication. Such extreme degrees of relaxation may occur in tabes, general paralysis of the insane, multiple sclerosis, cerebrospinal syphilis, neoplasms or injury affecting certain portions of the central nervous system or spinal cord; patients presenting these symptoms are likely to be brought to the proctologist in the belief that the trouble is due to rectal disease. Hence, he should be prepared to understand the pathology of these conditions in order to classify them properly and refer them to those best able to treat them.

Subjective sensations about the anorectal region are of interest in connection with the diagnosis of general diseases, but cannot be discussed in greater detail here. Enough has been said to show that because of the intimate relations of the various organs of the body, disease of one is likely to produce physical changes which may be useful in diagnosis because of their frequent association with certain pathological states.

REFERENCES.

1. Lynch: *Diseases of the Rectum*, p. 283.
2. Creadick: *Journal A. M. A.*, October 16, 1920.
3. S. H.: *Records of Rectal Clinic*, New York Hospital, Dr. Pool's Service.
4. N. P.: *Records of Rectal Clinic*, New York Hospital, Dr. Pool's Service.
5. Hill and Landsman: *Journal A. M. A.*, March 22, 1919.

MEDICAL SOCIAL SERVICE IN DISPENSARIES.*

By the Public Health Committee of the New York Academy of Medicine.

I. BRIEF HISTORICAL ACCOUNT.

Medical social service, which began in this country in Boston a decade and a half ago[1] to enhance the efficiency of hospital medical work and to render the results more enduring, has found its way into the institutions throughout the continent and has become a recognized ancillary department in the dispensary as well as in the hospital. Its activities in the outpatient departments numerically exceed those in the hospitals.

The growth of medical social service has been so rapid and spontaneous as to elude standardization. There exist differences in the fundamental conceptions of the functions of this new branch of hospital and dispensary organization and accordingly the methods of procedure and the technic differ materially.

The existence of organized medical social service has been too short to provide for the training of workers on a scale commensurate with the importance of the task and the needs of the service. Many of the hospitals give practical instruction in this branch of work to the pupils of the training schools. The first clearly defined and systematic courses of instruction were established by Simmons College in Boston and by the University of Indiana in connection with the Robert W. Long Hospital at Indianapolis. In Boston the course is given under the auspices of the School for Social Workers maintained by Simmons College and Harvard University. It consists of class instruction and practice work in connection with the social service departments of the Massachusetts General Hospital and the Boston Dispensary. In Indiana the instruction was originally given in the department of sociology but later was put in a department by itself.

A course in medical social service is being offered at the University of California in conjunction with the department of social economics of the University. The Chicago and Philadelphia Schools of Social Work, and the New York School of Social Work (formerly the School of Philanthropy) offer theoretical and practical instruction in medical social service, but all of it is still in the first stages of development, owing to the newness of the profession and the lack of generally accepted standards. The Smith College Training School for Social Work has organized a course for medical social workers, following its successful war experiment in the training of social workers for psychiatric clinics. The course offered at Smith College consists of eight weeks of theoretical instruction, followed by a period of nine months' practical training at the hospitals with which arrangements have been made for the purpose, and a concluding summer session of class study. In the first eight weeks the students "are made acquainted with the application of the scientific method in sciences bearing upon social problems," and receive instruction in the etiology and the preventive aspect of certain diseases. The concluding period of advanced instruction is designed to correlate the acquired field experience of the student with scientific research through class conferences, discussions and lectures. The department of nursing and health at Teachers' College, Columbia University, is likewise developing a course of instruction for third year students of approved training schools, as well as for graduate nurses. There are probably other schools which offer similar instruction.

---

*This constitutes a part of the report on the Dispensary Situation in New York City by the Public Health Committee of the New York Academy of Medicine, of which Dr. Charles L. Dana is chairman, Dr. James Alexander Miller is secretary, and E. H. Lewinski-Corwin, Ph. D., is executive secretary.

[1] One of the earliest experiments in hospital social service in New York was in connection with the Children's Department of the Post-Graduate Hospital, under the direction of Dr. H. D. Chapin. It was started in the spring of 1890.

The American Association of Hospital Social Workers, as well as local associations, present forums for the discussion of the various problems encountered in the discharge of the manifold duties devolving upon them. The Hospital Social Service Association of New York City holds stated meetings, publishes a quarterly and a bulletin and offers a course of lectures to nurses interested in social work. Training of medical social service workers for certain types of cases, such as the tuberculous and mental, has been carried on by several organizations.

II. SCOPE AND FUNCTIONS.

The bulletin of the department of social service of Indiana University descrebes medical social work as "a part of the wider public health movement and the present demand for efficiency, even in medicine." It goes on to say that a social service department fails or succeeds precisely in so far as it is able:

1. To procure for each individual patient whatever the medical institution needs for him, but should not itself provide, in order to complete his care or cure.
2. To educate each patient and student with whom it comes in contact. He should understand the interrelations of vice, poverty, and disease; of physical, mental, and economic conditions.
3. To follow each patient until he is as thoroughly reestablished as possible and to carry to his community, through the patient or otherwise, added knowledge of bad physical conditions—and a way in which to eliminate or prevent them—which increase man's burden and make for human misery.

The formulation of the scope and functions of medical social service, as far as it has been attempted, emphasizes the importance of considering the environmental background of the patient in securing the best results from medical treatment. Davis and Warner (1) briefly define medical social service work as meaning "assistance to the physicians in the education of patients and the control of their environment." Miss Ida Cannon (2) describes it as an effort "to understand and to treat the social complications of disease by establishing a close relationship between the medical care of patients in hospitals and dispensaries and those skilled in the profession of social work."

For purposes of ascertaining the organization and methods employed in the medical social service departments in New York city, a survey was made of these departments with special reference to the dispensaries. An agent of the Public Health Committee, herself a medical social worker, interviewed the person in charge of each department and also copied a number of records from the files of each department.

Among the questions asked of the head of each social service department studied, was one relating to the function of the department as conceived by the institution. The following is a summary of the replies regarding the function of social service, 1, with reference to the clinic physicians, and, 2, with reference to the patients and the community.

1. As far as the relation of the social service department to the physicians was concerned, "informing the doctors as to the social needs of the patients and of the assistance available through the social service department," was the definition given by six institutions. In four of the institutions the function was regarded as consisting of "reporting to the doctor the social conditions bearing on patients' illness." "Helping the doctor to complete treatment of patients" was the answer given by one of the chief workers. In three of the institutions the duty was conceived to be that of assisting doctors in carrying out treatment of patients; in three others, "interpreting doctors' instructions to patients." Another formulated it as consisting of "assisting physicians in explaining advice to patients"; and still another as "assisting physicians in giving patients a new favorable start in the community."

2. Regarding the responsibility of the social service department to the patient, fifteen institutions defined it as "establishing the patient or the family as an independent economic unit in the community"; seven as "education of the patient and family in hygiene," one, as affording "physical, mental and moral regeneration of the family"; one as "assisting patient in regaining health"; one as "educating the patient in the resources of the community, which can be used in solving his difficulties"; one as "aiding the patient in readjustment after illness"; one as "advice and assistance to the family." One department dealing with mental cases only, defined its work as "education of the patient and the public in mental hygiene"; another specialized service, one dealing with children, limits its function "to the remedying of family difficulties to insure more efficient care of the child and prevent future illness." In the judgment of one department, "social service work means special treatment when necessary"; another limits its field of work to the "education of the patient as to the need of treatment"; two others, to "securing hospital treatment for the patients"; and still another to the "bringing of outside resources to co-operate with the hospital in the treatment of the patient."

From this summary it will be seen that the field of endeavor to which medical social service has addressed itself is very broad and varied. In 1913 Miss Cannon wrote as being impressed "by the diversities in the interpretations of the hospital social worker's function, and by the great need for more adequately trained workers" (3). A report of the committee on training made recently (June 5, 1919) at the annual meeting of the American Association of Hospital Social Workers likewise revealed the existing broadness of conception of the scope of the work and the lack of standard methods of procedure.

A study of the records of the several social service departments in the dispensaries of New York throws a great deal of light upon the methods pursued in social service work. As has been stated above, six institutions recognize the education of the doctor to the social needs of the patient, as one of their functions. Assuming this to be one of the duties of the social service department, the two functions involved in carrying it out are: gaining the information and imparting it to the doctors. In the tuberculosis clinics and in the cardiac clinics the information as to the social facts is kept with the medical findings and is readily available to the physician. In all the other departments, with few exceptions, there are no systematic methods of conveying to the physician the information about the social environment of the patient. The worker may or may not remember to supply the doctor with the information; at times he has to call for the desired data. The records of the social service department are not filed with the medical histories and therefore do not become automatically available to the physician at the time when the patients present themselves for further attention.

Three fourths of the institutions studied felt that their greatest obligation to the patient was to refit him for his place in the community. Yet among the patients under care in the various social service departments which came within the compass of our study, this was the evident problem in only a small percentage of cases. Seven head workers emphasized the importance of educating the patients and families in hygiene; among the cases studied about one third were accorded this service.

The lack of precise formulation of the function of medical social service has resulted in the use of the department for all kinds of work belonging to other branches of the institutional organization, and has overburdened the social service departments with work which might or should be handled through other agencies. As the medical social workers are usually nurses, they are frequently called upon to help the physicians in the clinics by taking temperatures, weight and cultures, to the detriment of their special work. As a broad proposition, it may be stated that the requests of the physicians and the managers determine the functions of the department to a very large extent. The analysis of the table of Functions Performed, found in another part of this report, bears out this statement more fully.

III. THE PERSONNEL OF THE SOCIAL SERVICE DEPARTMENTS AND THE EXTENT OF THEIR WORK IN THE DISPENSARIES.

Practically all the institutions in New York which were known to maintain social service work were visited by the special agent of the Public Health Committee. Of the institutions studied, twenty-one had definitely organized departments, while in four the work was organized on a basis different from that of the ordinary social service department.

The twenty-one institutions in which the social service could be studied for purposes of comparison are as follows:

DISPENSARIES CONNECTED WITH GENERAL HOSPITALS.

Bellevue
Mount Sinai
Post-Graduate
Roosevelt
Long Island College
French
St. Luke's
Beth Israel
Brooklyn Hospital
Lincoln
New York Hospital
Presbyterian

INDEPENDENT DISPENSARIES.

Vanderbilt (College)
Cornell (College)
New York Dispensary
Brooklyn City Dispensary
University and Bellevue (College)

DISPENSARIES CONNECTED WITH SPECIAL HOSPITALS.

Woman's Hospital
N. Y. Eye and Ear Infirmary
Ruptured and Crippled
Skin and Cancer

Seventeen institutions have more than one worker. In many of the institutions there is no differentiation of function and the social service workers do the hospital as well as the dispensary work. Some of the institutions employ a considerable number of workers. In one hospital, for instance, there is a head worker with twenty-four assistants. One has a head worker and twelve assistants; two have seven assistants each; two have six assistants (in one of these, two of the assistants are graduate nurses assigned to hospital follow-up, and two are senior pupil nurses assisting in the home nursing, but directed by head workers); two have five assistants each; eight have two assistants each; and four have one assistant each, making a total of 102 paid social workers. In addition, eight institutions have paid clerical helpers, two of them employed by one institution, which also has a bookkeeper, a messenger and a telephone operator in the social service department.

Very few volunteers are used in connection with the social service work. Fifteen institutions do not use volunteers at all; six use them only for clerical help; and in only one institution are volunteers used in connection with the visiting of patients. The reason for this lies probably in the exactitude of the work and the importance of continuous service for efficiency. It is very seldom that volunteers can be counted upon to give intensive application to the work. In all the institutions the head workers complained of the shortage of capable assistants, and in seven institutions complaint was made about the inadequate office space allotted to the work.

Fifty-seven of the assistants in social service work, or about sixty-two per cent., devote their time to the dispensaries. Of the seventeen chiefs of the social service departments, fourteen divide their time between the dispensaries and the hospitals, and three give all their time to the dispensaries. This large number of workers in dispensaries, as contrasted with the number doing hospital social work, shows the tendency away from the original limitation of social service to ward patients only, although in most of the institutions the main seat of the social service is still in the hospital. In only one of the general hospitals is the social service office located in the dispensary and doing most of its work for dispensary patients, although it assists with indoor cases as well whenever they are referred from the wards. In some institutions, however, particularly the special hospitals, the hospital social service is regarded as of greater importance than the dispensary social service.

IV. RESOURCES AND AUXILIARIES: AND ASSIGNMENT OF STAFF AND ITS RESPONSIBILITIES.

Funds for social service are usually raised by women's auxiliaries which, either independently or jointly with the institutional authorities, exercise control over the social service. In seventeen institutions out of the twenty-one included in this survey, the funds were raised in this manner; only four of these auxiliaries include any representation of the hospital board. In one hospital, the department was maintained by the New York School of Social Work, in another the Mental Hygiene Committee of the State Charities Aid Association maintains social service for a certain type of patients; and in two institutions a special fund, donated by private individuals, is put at the disposal, in one case of the superintendent of the hospital, and in the other of the director of nurses, who have sole authority over the social service departments. The total amount of money spent on social service work has not been ascertained, neither has the prevailing rate of salaries paid to the workers. In many institutions the staff is insufficient to meet the needs (this was particularly so during the war) but only in one case was a definite complaint made of lack of funds.

Because of the independence of the funds for social service, the medical social service staff, unlike other paid workers in the hospitals, is accountable not to the superintendent of the institution, but either to the auxiliary only or to a composite body representing the auxiliary and the hospital authorities. In six instances their responsibility is entirely to the auxiliary composed of interested women who have no connection with the hospital management. In three instances the hospital or dispensary board is represented on the auxiliary. In one instance the supervising authority consists of the auxiliary, the superintendent of the hospital, the supervisor of nurses, and a representative of the board of managers. In three instances the social service is managed by the women's auxiliary and the superintendent; in one instance, the women's auxiliary and the supervisor of nurses; in one instance, the women's auxiliary and the Association for Improving the Condition of the Poor; and in four other instances, mentioned before, they are responsible to the Mental Hygiene Committee of the State Charities Aid Association, the School of Social Work, the superintendent of the hospital, and the director of nurses, respectively.

With the exception of one instance where considerable friction was reported to exist between the social worker who was responsible to the auxiliary and the supervisor of nurses, the inquiry did not bring out the existence of any tension or administrative difficulty due to the division of responsibility or the independence of the social service department from the rest of the hospital organization. The responsibility of the medical social service department to a group of interested, nonprofessional women is of advantage in that it keeps the human elements of the problem fresh and vivid and brings to the aid of the work wider social and financial resources, but it is faulty from the viewpoint of administrative organization and is likely to retard the recognition of social service as an indispensable integral part of dispensary and hospital work, ample provision for which should be made in the general budget of each institution.

V. THE TRAINING OF MEDICAL SOCIAL WORKERS AND THE REQUIREMENTS.

In only three of the New York institutions studied are opportunities offered for the systematic training of women for medical social service. One is the Post-Graduate Medical School and Hospital, where the social service department is a branch of the New York School of Social Work and where regular instruction is given: and the others are the Neurological Institute Dispensary and the Clinic for Mental Diseases at Cornell, where courses are given to such students of the Smith College Training School for Social Work as specialize in mental hygiene. In no other institutions are any opportunities for training provided, except that the pupil nurses of the respective training schools get a certain amount of experience in medical social work under the guidance of the department. In four institutions this experience of pupil nurses does not exceed two weeks, one month, two months, and three months, respectively. In three institutions the opportunity is afforded to one nurse at a time—in one institution for one month, in the second for two months, and in the third for three months. In the institution where the three months' training is given it has been only for senior class nurses. In two institutions only probationers are instructed for a few weeks; in another, the pupil nurses are required to make visits with the medical social workers for a certain period of time. In the Presbyterian Hospital the senior nurses spend four months with the Henry Street Settlement workers in addition to two months in the social service department of the hospital. This constitutes the whole field of instruction available in the hospitals for either nurses or others desiring training in medical social service work.

At every institution studied an effort was made to obtain from the chief of the social service department a description of the essentials of education and other qualifications for a successful medical social service worker. A perusal of the answers shows that there is an insistence on the need of preliminary nursing education, and a lack of sufficient appreciation of a thorough grounding in social economy and social "case work."

The prevailing idea among the medical social workers of New York is that nursing education is an essential prerequisite for the successful performance of the work. It must, of course, be admitted that a great deal of the knowledge which a nurse possesses is of service in dealing with hospital cases and in connection with the visiting of certain types of cases, particularly where instruction to the patient as to how to follow the doctor's advice in treatment is part of the problem. The fact of her being a nurse makes her message more authoritative. It is undoubtedly true, also, that a woman with initiative and imagination and a sympathetic interest in her work, possessing training in social technology, is fortified in performing her functions when she has had nursing education too. There are such women in the field of social work now, but it would be inadvisable to limit the field of medical social service to nurses exclusively. Our study of the social service departments in New York has shown that the Post-Graduate Hospital, where the work is done by students of the School of Social Work under the guidance of a director who has had no nursing training, compares very favorably with other institutions where none but nurse workers are employed. In the Massachusetts General Hospital, of the thirty-two workers only three are nurses. Miss Cannon, the chief of that service, herself a nurse, states that it is difficult to obtain women who, in addition to their nursing education, possess a thorough social training and are prepared to work as social workers, and not primarily as nurses. In Washington University Hospital (Barnes Hospital), at St. Louis, the University of Pennsylvania Hospital, at Philadelphia, and the General Hospital of Cincinnati, excellent social service work is carried on under the guidance of women with no nursing education. Likewise, in the Robert W. Long Hospital at Indianapolis, which is part of the Medical School of the University of Indiana, the social work is done entirely by students of the medical, nursing and sociological schools. The instruction and direction is given by women of no nursing experience. The character of the work done is of a high grade. Many of the students in the university utilize their experience in social service work as a basis for masters' and doctors' theses. It would therefore seem most inadvisable to exclude from the new profession by a rule of thumb the large numbers of women who, by education other than nursing, would be qualified to carry on the work satisfactorily.

Furthermore, the training of nurses, as it has been carried on, and still is to a large extent, is not designed to nurture qualities of mind indispensable to successful social work of a high order. The nature of a nurse's work as ordinarily understood does not call for much initiative and independent judgment; on the contrary, she must learn how to carry out instructions. There are certain inhibitions which must become a part of her professional consciousness and behavior if she is to prove successful in her bedside work.

Under the circumstances it was only from among the nurses who have had a broad prenursing education and who are possessed with a quick intelligence and a mind above the average that medical social service workers have been recruited in New York. It is due to these superior qualities, and not to their nursing education, that they have been able to render services of a high grade. The hospitals of New York, with the exception of two, have never tried to enlist the services of others than nurses for the work.

As they are constituted at present, neither the training schools for nurses nor the schools for social case workers are offering adequate preparation for medical social workers. There is obviously a need of a new type of training which would qualify women for this new and growing profession. By the nature of things it must be built on two foundation stones: one is a broad appreciation of the etiology of disease and an intelligent understanding of certain medical procedures; and the second is a knowledge of social conditions and the technology of family case work.

VI. RECORD FORMS.

As in the medical part of the study the character of the work was judged by the information gleaned from the records, so in the social service study an analysis of the records was made with a view of determining how the social service departments work, and what they accomplish. As in the case of the dispensary physicians, it is no doubt true that the social workers do more than their records indicate, but an objective study of the work must be made on the basis of what the worker considers worth recording for his or her guidance or for the permanent handling of the case. Before considering the results of this analysis of case records, it will be well to consider the record forms now used.

The employment of uniform record forms would be advantageous, even if it is not necessary to record for every patient all of the information called for thereon, as such uniform records would facilitate the functioning of a central clearing bureau, and also would make possible studies aimed at the crystallization of social service function and procedure. At the present time there exists a great diversity in forms used. They differ in the amount of information called for, in the arrangement of items, as well as in the size of the forms themselves. The number of headings on the records ranged from sixty-five to twenty-seven. There are only nine headings which appear on all the forms from the fourteen institutions whose blanks have been analyzed. Those nine headings are: name of patient, address, age of patient, addresses of friends and relatives, years in the United States, diagnosis, present occupation, marital status and earnings. With regard to the earnings, on three records there is no statement qualifying the income, as weekly or monthly. On twelve records the weekly income is inquired into, but in only five instances was it made clear whether it was the income of the last week or of an average week. On some records provision is made for the ascertainment of both the "present wage per week" and "the normal wage per week." Some of the records call for just the wages, others for incomes from all sources. It goes without saying that a uniform and precise procedure with regard to so important an item as the financial resources of the family is essential. On all of the records except one, information is asked concerning the church affiliation of the patient.

Without going into detailed computations on how many of the blanks the several items of information are found, it may be said that the records differ considerably from each other, but as a rule ample provision is made for obtaining essential facts. The facts sought can be broadly divided under six heads: 1. Information needed for the identification of the patient, which includes data concerning the patient's name, address, age, sex, nationality, time in the United States, conjugal status, etc. 2. Medical history, i. e., past and present history, the diagnosis, treatment and complications of condition. 3. The training and work of the patient, which covers education, special fitness, past and present occupation and the nature of work. 4. Home and family —This calls for information concerning the size of the family, the number of dependents, number of rooms occupied, ventilation, and other sanitary features of the dwelling. 5. The financial status—by which is meant information concerning the wages and other sources of income, also data bearing on the budget of the family, particularly such items as rent, insurance, and other definite ascertainable expenses. 6. The social service problem and what has been done for the patient.

The information concerning all these points is inquired into by the several institutions with a varying degree of fullness. The greatest similarity of questions pertains to the identification information. The items concerning the medical history show a minor degree of likeness. Every record, however, has space for diagnosis. On some of the blanks there is an entry for previous treatment or for previous places of treatment, and on two, for previous illness. Likewise on only two of the cards is space provided for present medical treatment and on three for complications. It would seem that the records call for too little information concerning the physical and mental condition of the patient, the mode of treatment prescribed and progress made under treatment.

With regard to the training and work of the patients, the present or last occupation is invariably inquired into. Only one of the cards suggests an inquiry into the process of work and only three ask about the industry in which the patient has been employed. In five institutions the question is asked whether the employment is seasonal or steady. The question of unemployment is raised on nine of the record forms. In only one instance are the hours of work inquired into. Something regarding the education of the patient is required to be recorded in three institutions and in two his vocation and special training. Here, again, one might criticize the forms in that they do not provide for an adequate elicitation of information concerning the industrial hazards of occupations and evidently do not lay particular stress upon the relation between disease and the work and habits of patients.

With respect to the home and family conditions, the information required is full and more or less uniform. Here again little importance is evidently attached to the obtaining of facts concerning the condition of health of members of the family other than the patient. Such information would be of importance from the point of view of making plans for the family as well as from the standpoint of disease prevention.

With reference to the financial conditions of the patients, the questions about the income have been discussed above. On the whole, the schedules on that score are satisfactory, although in only few instances are inquiries made into the family budgets, except as to expenses for rent.

As to the social service problem, in five instances the arrangement of the record calls for a definite statement of the social diagnosis or the immediate need or the apparent underlying problem. In all other instances no statement of the problem is attempted. The same five record blanks, with perhaps one exception, call for rather minute information concerning the social worker's effort in the case and the final disposition of it. The other cards vary in detail with regard to these points: some provide for the discussion of items of relief and other services performed. The records can be improved in this respect also.

On the whole it may be said that the social service record forms, as they are, call for a great deal of relevant information. In most instances the data secured are probably sufficient to permit a proper planning of action. What most of the records need very badly is a topical arrangement of information under several general headings and the segregation of data in such a way that the details of the investigation would be separated from the main facts about the physical condition of the patient and his economic and social difficulties. Above all there is a need of a similarity of recording of the facts and also of assigning precise meanings to the terms used.

VII. STUDY OF THE CONTENT OF SOCIAL SERVICE RECORDS.

An analysis was made of 675 records selected at random from the files of the institutions studied. Of the records examined 301, or 44.5 per cent., were children's cases; 121 concerned men, and the remaining 248, women. These records gave detailed information of the types of cases which receive the attention of the social service departments and of the methods of work employed, as well as the results achieved. Tabulation of the records shows that on 88 per cent. of them medical findings are indicated. It is admittedly of prime importance that the medical condition of the patient should be stated in every instance of medical social service work. Likewise, in making plans for patients it is of importance to know and record what medical treatment has been indicated, and if no medical treatment is necessary, this fact should be recorded; and yet only 59.3 per cent. of the records contain any reference to medical treatment. In 27.5 per cent of cases the family history of the patients is recorded and in only 20.3 per cent. of the cases is the patient's medical history given.

Of the 675 patients whose records were obtained, 77.5 per cent. were visited in their homes. In the majority of institutions over 90 per cent. of the patients were visited. In some institutions all cases referred to the social service department are visited. Some, however, show a relatively small percentage of home visits and this accounts for the average of only 77.5 per cent. of the cases visited. Among those which are considerably below the average in visiting are some of the best general out, patient departments, an excellent clinic for special cases and two university clinics. Although the total number of home visits recorded equals 77.5 per cent. of the cases, the general description of the home conditions is given on only 50.7 per cent. of the records, while 68.6 per cent.

of the records indicate the number of rooms occupied by the families visited.

The sources of income of the family are recorded in 71 per cent. of the total number of cases, and the family expenses are given in 69 per cent. of the cases. In the majority of instances, however, only several items of family budget are ascertained, chiefly rent.

The present occupation of the patients is indicated in 61.5 per cent. of the cases, and the past occupation in 55.5 per cent. This poor showing with regard to a vital point of information cannot be explained by the fact that 44.5 per cent. of the cases were children and 36.7 per cent. women, because in every instance of a child the occupation was regarded as stated; likewise, in cases of women, when the term housekeeper was given the occupation was considered to have been recorded.

In addition to the visits to the homes of the patients, the social workers called on other persons or agencies which might be interested in the case, such as relief agencies, churches, employers, relatives, etc., and the records show that in 17.2 per cent. of the cases such additional visits were made by the workers. Besides these visits, other agencies were communicated with by letter or telephone, so that in all, cooperation was sought in about 39 per cent. of the cases.

It was on the basis of the medical data as to condition and treatment and on the information elicited by visits to and talks with patients, families and others interested that the social service problems were ascertained and plans laid to meet these problems. In 96.5 per cent. of the cases the social service problem is indicated on the records, and in 93.6 per cent. of the cases the solution of the problem is formulated.

Of the 675 cases selected at random only 20.6 per cent. were recorded as closed, and of these only three fourths bore the date of the closing. Some of the open cases were of long standing and no active work was being done with them. The study of the records indicates that nowhere has an attempt been made to ascertain the end results of the work and therefore it is impossible to judge in many instances what have been the achievements of the social departments.

An effort was made to determine the causes for closing cases or the reason for keeping them open. In ninety cases, or 13.3 per cent. of the total, we could not determine whether the cases were open or closed. Of the 20.6 per cent. closed, in 9.8 per cent. the object had been accomplished. A small percentage was closed for each of the following reasons: other organizations were interested; the patient died or was lost in moving to another district or giving a wrong address; some were referred to other doctors or institutions better fitted to treat the patients; and in ten cases investigation showed no need for care. Three of the five cases classed as other reasons are significant in that they were closed because of a shortage of workers. The cases were from a teaching institution where the policy is, apparently, that no more work should be attempted than can be properly carried out.

Among the 446 cases known to be pending, no reason for keeping the cases open could be ascertained for eighty-four patients; 322 needed further medical care or home instruction; twenty-three cases needed further financial aid; several of these cases were held open to repay a loan made for apparatus or special treatment. Opposition of the family made it necessary to keep three cases open, while among the cases closed, one was found where the reason for closing was uncooperative patient.

According to the records only 40.5 per cent. of the cases were registered with the social service exchange of the Charity Organization Society. Some institutions make a large use of this agency, recording every case. One institution obtains information from the social service exchange, but registers no cases with them, the reason being that the relation of the patient to the medical institution should be confidential and no names of patients should be divulged to an outside agency.

VIII. TYPES OF SOCIAL SERVICE ACTIVITIES.

The work of the several social service departments has been summarized under nine heads, on the basis of the information given as to what constituted the problem in each of the 675 cases analyzed. The main problems thus ascertained were found to be: 1. Home nursing and instruction. 2. Followup work with the patients to secure their return to the clinic for further treatment and examination. 3. Securing employments suitable to their conditions. 4. Arranging for family readjustment so as to enable the patient to go either to a convalescent home or to a sanatorium, and to take care of the family during the absence of the father or mother. 5: Convalescent care of the patients. 6. Institutional care. 7. Additional clinic attention either at the same clinic or at some other clinic where the condition of the patient might be treated to better advantage because of the ampler facilities. 8. Securing financial aid for the patient and the family. 9. Investigating the various bearings of environment with reference to the patient's condition.

The following is a summary of the various types of social service work done in the twenty-one institutions included in the present survey:

	Number	Percent
Home Nursing and Instruction....	221	32.9
Follow up	47	6.9
Employment	17	2.5
Family Readjustment	25	3.7
Convalescent Care	77	11.7
Institutional Care	117	17.3
Additional Clinic Care............	45	6.6
Financial Aid	94	13.9
Investigation as to Problem........	30[2]	4.5
Total	675	100

---

[2] Two cases, problem not stated.

According to this classification the largest number of cases, or 32.7 per cent., were in the group of home nursing and instruction. In other words, almost one third of the cases, in the judgment of the social service workers, required sanitary supervision in the home, instruction in hygiene and diet, home nursing, or direction as to the carrying out of treatment. In this respect four institutions, of which three are large general out patient departments of hospitals and one a detached general dispensary, show the largest percentages. 13.8 per cent. of the patients were financially harassed and the social service departments felt that their function was to step in and obtain for the families the needed aid; three institutions, one a large general out patient department, one a university clinic, and the third an institution for the treatment of special conditions, have the largest relative number of financial aid cases.

Providing institutional care was another of the most frequent functions of the social service departments; 17.3 per cent. of the cases in the study received this kind of attention from the social service. Another large group, constituting 11.7 per cent. of the total number, received convalescent care. In 6.9 per cent. of the cases the function of the social service department was to follow up the patients and bring them back to the clinics. This was found being done at only seven institutions, and chiefly in connection with cases of tuberculosis and poliomyelitis.

The finding of employment and making family readjustments are evidently not among the frequent duties which fall upon the social service departments as they function at the present time. It is surprising that in only 2.5 per cent. of the cases the chief problem was the need of arranging a change of occupation for the patients, and likewise in only 3.7 per cent. of the cases the chief problem was the need for family readjustment due to the illness of either the breadwinner or the mother.

REFERENCES.

1. Davis and Warner: *Dispensaries,* New York, 1918, p. 101.
2. Cannon, Ida: *Social Work in Hospitals,* New York, 1913, p. 1.
3. *Loc cit.,* p. vii.

(To be concluded.)

LONDON LETTER.

(From our own correspondent.)

Medical Men Organizing in Great Britain—Treatment of Eye Diseases in Great Britain—The Coal Smoke Curse and Its Conquest in America—Care of the Tuberculous—Institute of Physics—Epidemic Diseases in London.

London, *December 7, 1920.*

It has long been evident that unless medical men organized to protect their own interests they would be unable to carry any weight. Politically the medical profession is practically impotent and as the Ministry of Health is largely a political body, and as the bulk of the inhabitants of Great Britain can call upon the services of medical men under the insurance scheme, if doctors are not strong enough to resist they will be almost at the beck and call of their patients. It must be borne in mind that those who can claim medical treatment under the insurance act are not especially favorable to the medical profession, in fact, a considerable proportion is frankly antagonistic. In the event of a clash between medical men and their clients, it might go badly with the doctors. The Ministry of Health after all, is a department of the Government, and its actions are likely to be swayed by political motives. Those who can wield the power will have the best chance of getting their own way and *per contra.* The medical men have not the power at the present time and are therefore likely to be imposed upon.

It is encouraging to learn that medicopolitical unions are being formed. The inaugural dinner of the North London branch of this union was held on December 2d, last. Among those present was Dr. E. S. Stancomb, president of the union, who spoke in part as follows: He said the object of the union was twofold, viz., to do their duty to the community and to protect themselves against too much red tape and interference. It was not their desire to oppose progress. In the past few years they had seen processions of the men who fought in the air and on the sea and under the sea and on the land, but they had not seen a procession of the medical men who were engaged at the front abroad, and at the home front, looking after our sailors and soldiers, their women and children, and the community generally. If it had not been for medical science we should have been beaten to a frazzle. If the medical men could organize during the war for the good of the community, they could organize with the same object now that we had peace, at least comparative peace.

At the present time the medical officers of many important boroughs were paid considerably less than other officials, such as the gentlemen who looked after the trains and the electricity. The health of the community was the real wealth of the community. Their object, in brief, was not to strike as the term was generally understood, but, if necessary, to strike against Government parsimony and red tape and interference. The doctors undoubtedly were in a position to understand the needs of the community better than many other gentlemen who found their way to the House of Commons, and the doctors should be better represented there. In the organization of the Ministry of Health and its work the medical profession as a whole had been ignored. That was because medical men had hitherto failed to combine in any way.

Dr. Nathan Raw said he was certain if other branches of the union were formed in the same vigorous way in which the North London branch had been brought into existence the doctors of the country would soon make their voices heard, not only in London, but throughout the country. Indeed, if the medical profession could unite on one policy they could practically rule the country. The doctors in the House of Commons at the moment were so few that they carried less weight than many sections of the community with much less responsibility. He therefore hoped to see doctors combining all over the country, and thinking out great policies for the good of the country and for the protection of their dignity and privileges.

* * *

Little was known concerning the surgery of the eye in Great Britain until the expedition into Egypt under Sir Ralph Abercrombie took place following the advance of the French into the land of the pyramids led by Napoleon Bonaparte. The British troops became the victims of contagious ophthalmia, then and now widely prevalent in that country, and brought back that scourge into Great Britain. Incapacitated from further fulfilling their military duties, the disease was spread by these men throughout the length and breadth of the land.

In the *Daily Telegraph*, December 4, 1920, is given an interesting account of the beginnings and development of scientific eye treatment in this country. As said before, little was known of eye treatment in the years about 1802. It was largely an open field for quacks and impostors. A young surgeon, John Cunningham Saunders by name, was one of the first to realize the need for a closer study of the eye and its diseases, and he proposed the foundation of the Moorfields Eye Hospital, of which he was the first surgeon and which has established its fame as an institution of its kind second to none. Although no longer in Moorfields, having been removed to more spacious and adequate premises, and although officially it is the Royal London Ophthalmic Hospital, it is known in all parts of the English speaking world as Moorfields. Postgraduate students not only come from Great Britain, but surgeons from America, Canada, and from practically all quarters of the globe, to this London eye hospital. A touching tale is told of its connection with America in its early days. Dr. Edward Reynolds, from Boston, Mass., arrived in the year 1816 to pursue his studies at Moorfields. On his return to America he found his father blind from cataract in both eyes. Fortified by the skill and experience he had gained in London, he operated and restored sight. It is said that the operation for cataract was invented and first performed in Moorfields.

The object of the article referred to was to call attention to the desperate plight in which this institution finds itself from the financial viewpoint. For 115 years the hospital has been doing its healing work, saving the sight of the young, restoring the sight of the aged, alleviating pain, making good the eye injured by accident, sending citizens from its doors well capable of earning their living who, but for its ministrations, might have become blind dependents of others. But as is the case with all other institutions here for the care, relief and treatment of the sick and injured, Moorfields is so hampered in its work through lack of funds that unless money is quickly forthcoming its capacity for good will be wrecked.

This year investments of the face value of £8,000, given or acquired when four per cent. was good return for money, will have to be sold for what they will fetch. Maintenance costs have doubled. Salaries, which for nine months in 1917, after three years of war, were £3,013 ($15,065), are now £5,701 ($28,505). The burden of rates, £820 ($4,100) in 1914, is now £1,280 ($6,400), and will be higher. It may be mentioned that no one is ever kept out because he or she cannot pay, but inpatients are now asked to pay what small sums they can afford. As for outpatients, contributions are still voluntary. An appeal is now being issued for £100,000 ($500,000), to which it is hoped there will be response in America, India, and Canada, as well as in Great Britain. While, of course, all British hospitals are in a desperate condition financially, and while equally, of course, all are deserving, the big London eye hospital is perhaps more deserving than many. Blindness is one of the most terrible afflictions to which the human race is subject, and is frequently easily prevented. For example, ophthalmia neonatorum, if not treated in time, inevitably leads to blindness. On the other hand, if treated early it is generally amenable to proper treatment. In the case of threatened loss of sight, the old adage, "prevention is better than cure," is more emphatically true than in most diseases, and preventive treatment is assuredly better in every respect than caring for those who have become irretrievably blind. Therefore, Moorfields should not be allowed to lose its capacity for good. Such an event would be a national disaster.

The financial state of the hospitals is a question which is now arousing concern in all circles, and is a problem which must be met, and met soon. The voluntary system, if it has not broken down entirely, is inadequate to cope with existing conditions. However, steps are being taken to deal with the situation, and when matters in this direction are more matured, they will be discussed in succeeding letters. The hospital problem is the one of the hour, so far as the health of the people and the medical profession are concerned.

* * *

On more than one occasion the evils of coal smoke in the cities of Great Britain in general and of London in particular, have been discussed in these letters, and it has been pointed out that its continuance is mainly due to lack of obvious methods of prevention. That it is unhygienic cannot be denied, and that it is decidedly unpleasant is just as patent, but the British public appears to endure the infliction with equanimity if not with indifference. It is an evil to which all are inured, one perhaps almost hallowed by long use. However, there are a few in this country who now and then lift up their voices in protest against such an unhealthful custom, and there are even signs that some, at least, of city dwellers are beginning to rouse themselves from their lethargic attitude. Among these would-be reformers is Dr. C. W. Saleeby, who, in season and out of season, has never hesitated to denounce the practice of allowing the air to be laden with particles of coal dust, to the hurt of those who suffer from bronchial or other respiratory diseases, and to the discomfort of all. Dr. Saleeby delivers himself of his views in the correspondence columns of the *Medical Press and Circular*, November 24, 1920. As he has only recently returned from a second visit to America, he is able to compare the conditions as regards the smoke nuisance in the cities of that country with those which prevail in London. The comparison is not flattering to the hygienic methods of British sanitarians. He draws attention to the fact that under the New York regulations no one burns soft coal, but that while in the British health act black smoke is forbidden, the law is so easily evaded that it is virtually a dead letter. He further makes the pungent remark that if the industrial chimney can be rendered innocent in Pittsburgh, as according to him it has been rendered innocent, it need be noxious nowhere. He goes on to show that the domestic chimney sins not at all in America, because the women of the United States and Canada live in houses where just a little science and just a little sense have been invoked.

A Departmental Committee on Air Pollution by Smoke and Other Noxious Vapors, was appointed by the Ministry of Health early in this year, and has published an Interim Report, in which Dr. Saleeby declares every one of the contentions laid before it was accepted. The committee recommends that no new house should receive official approval unless it be designed so as to be smokeless. However, despite this recommendation, the public seems as indifferent as ever to the coal smoke evil. Dr. Saleeby, therefore, writes in the hope that the small proportion of British citizens who have had training in the elementary laws of life may concern themselves in a sanitary reform which may make the air and light supply of British cities comparable in quality with their water supply, in which matter Britain led the world as far as she now lags behind in those others no less important.

* * *

It has been widely announced in this country that sanatorium treatment of the tuberculous is a failure. The Committee of the Sanatorium Benefit of the London Insurance have had large experience of this form of treatment, having been responsible from 1912 to 1920 for the provision of sanatorium treatment for more than twenty thousand tuberculous persons. Dr. Henry Lesser, chairman of the Insurance Committee of the County of London, contributed recently a letter to the public press in which he points out the committee's medical adviser, Dr. Noel Bardswell, has submitted reports on the treatment furnished by the committee and the lessons to be derived therefrom. Above and beyond all question there emerges the simple fact that sanatorium benefit is a failure. Of the patients whose treatment was commenced by the committee during the year 1914, over seventy per cent. were dead before the end of 1918. Dr. Lesser contends that obviously to continue the present arrangements for sanatorium treatment would be uneconomic and inexcusably wasteful. Prominent men who have given their lives to the study of this terrible problem in its social, economic, and medical aspects, are impressed with the urgent need for certain improvements, among which are: Encouragement of experimental colonies and settlements; experiments on the lines of local work centres; the subsidy of aftercare work to be limited to one or more selected boroughs.

It was understood that the Ministry of Health was introducing a Tuberculosis Bill, clauses of which provided for the provision of village settlements or colonies for the tuberculous and the care and assistance of tuberculous persons and their families. It is now proposed to omit these clauses, mainly on the grounds of economy. It is argued, however, that economy of this kind is quite false economy. Sanatorium treatment has been given a lengthy trial, and has proved, on the whole, a complete failure. On the other hand, the colony and village settlement system seems to be successful.

The best example in Great Britain of this system is at Papworth, near Cambridge. The writer a short time ago visited this colony and inspected it closely. He was greatly impressed with all he saw, and intends to send an account of the Papworth Sanatorium, colony and village settlement, to the New York Medical Journal. The Minister of Health is aware that the sanatorium by itself is of little or no use, and he also knows that the colony and village settlement system has, on a comparatively small scale, it is true, answered well. It is a financial question, but as said before it does not seem to be sound economy to cheesepare when dealing with tuberculosis. The tuberculous person working with his fellows at a certain stage of the disease is a menace. For the sake of the community and for his own sake it is best that he should be segregated, and what more effective mode of segregation can be devised than by placing him or her in colonies, industrial or agricultural, and village settlements, where he can render himself self-supporting or partly so, and where he will be no source of danger to his fellowmen, which is, after all, of the first importance.

* * *

It was announced recently that the Institute of Physics has been incorporated and has commenced to carry out its work. The object of this institute is, on the one hand, to secure the recognition of the professional status of the physicist, and, on the other hand, to coordinate the work of all the societies interested in physical science or its applications. Five of these societies are already participating, namely, the Physical Society of London, the Optical Society, the Faraday Society, the Royal Microscopical Society, and the Röntgen Society. Two hundred fellows are included in the first list of names. Sir J. J. Thompson, the retiring president of the Royal Society, has accepted the invitation of the board to become the first and at present the only Honorary Fellow. Sir Richard Glazebrook, F. R. S., is the first president of the institute. Physics is beginning to take its rightful place in the education of the medical student. It is recognized that a knowledge of physics is essential in a thorough medical education, and already some of the British medical schools have established chairs of physics.

* * *

In answer to a question asked in the House of Commons recently with respect to the prevalence of diphtheria, scarlet fever, and influenza in London, Dr. Addison, the Minister of Health, replied that scarlet fever and diphtheria had been exceptionally prevalent in London during this autumn, but both diseases were of an exceedingly mild type, and the death rate in each case was far below that experienced in previous epidemics. There was no evidence of the existence of epidemic influenza in England at the present time. The origin of these waves of zymotic disease was obscure. Similar though more fatal outbreaks occurred in 1892 and 1893. He was glad to say that existing machinery and the available hospital accommodation had proved equal to the task of coping with the present outbreaks.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, fifty cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, JANUARY 8, 1921.

THE EVOLUTION AND PROGNOSIS OF ABDOMINAL AORTITIS.

The evolution of abdominal aortitis is essentially variable, as everything depends upon concomitant lesions and the etiology of the process. From the viewpoint of the progress of the affection the aortitis may be distinctly localized or descending. The invasion is different according to whether the case is one of acute aortitis or a chronic process from the onset or following an acute lesion.

Acute aortitis sometimes develops very rapidly, the affection reaching its height in a few days, but when it assumes the chronic type its onset varies in character and is generally slow in developing. In the majority of cases the process is localized, remaining limited to the portion of the vessel extending from the subdiaphragmatic part to the bifurcation of the iliacs. The process is often localized but extensive, as is evident from many cases where both the aorta and the iliacs were sensitive and painful, while in an instance recorded by Teissier a double murmur heard over the umbilicus could also be heard over both iliacs, which were painful but ended there. As a third possible evolution abdominal aortitis should be mentioned following a slowly descending progress, as in the case of Roque and Corneloup, where the process, at first seated in the ascending portion of the aorta, extended progressively, at first being thoracic and then abdominal.

The evolution of the disease depends on the concomitant lesions and is essentially related to them. Usually the process is of moderate intensity without any alarming symptoms, but in other cases the symptoms presented are so acute that the process must be regarded as a serious type of the affection. The disease may undergo an evolution in distinct recurrences, although this is not common. The chronic forms may succeed the acute type, but generally these cases, when they first come under observation, have been going on for months or even years, and it is only after this lapse of time that the symptoms become manifest. The evolution of these chronic cases is occasionally effected by painful paroxysms occurring at distinctly fixed intervals; or the evolution may be slow with persistent pain, and although this is ameliorated by treatment it does not entirely subside.

The prognosis of the acute cases *quoad vitam* is usually good. In the chronic cases there are disturbances resulting from atheroma, in which case the prognosis is dependent upon the latter lesion. Atheroma, "the rust of life," as Potain called it, prepared the way for spontaneous rupture of the vessel, and this accident occasionally takes place. Consequently the prognosis in cases of chronic abdominal aortitis should be guarded. A bad prognosis should naturally be made when the aortitis is complicated by either gangrene or hemorrhagiparous lesions, an infarctus often being the cause of death, and when the abdominal aortitis is complicated by an aortitis in the upper portion of the vessel, we must rely upon the heart for the prognosis.

NEW PROVISION FOR THE HOSPITAL CARE OF THE SICK IN MIND IN CANADA.

By means of juvenile courts, observation homes, big brother and big sister movements, psychopathic hospitals, the whole Dominion of Canada is taking progressive steps toward ameliorating conditions as they are to be found among mental and nervous abnormal cases, other than those congenital cases or those suffering since birth, and the certified insane. Dr. Helen Boyle, the distinguished authority on mental disease, who has recently lectured in different sections of the Dominion, has reawakened the conscience of legislators and others to the crying needs of the problem as to how to care for Canada's unfortunates.

Some years ago, perhaps five or six, the Government of Ontario appointed Mr. Justice Hodgins, of Toronto, to make a report on the whole situation of the feeble minded as it affected that province. His report has now been before the present Government more than a year, with the result that it appears to have been pigeonholed. Some aver that the action of the Ontario authorities, or, rather, the inaction, is greatly hindering the handling of the problem of the feebleminded all over the Dominion. Less than three years ago the Canadian National Committee for Mental Hygiene was called into being; and the most recent piece of work done by that committee was the making, at request, of a mental hygienic survey of the province of New Brunswick. It included an investigation of some eighteen institutions caring for insane, feebleminded, delinquents, dependents, and unmarried mothers, together with a mental examination of five thousand children attending eleven representative public schools in that province. Of course, the survey was made with the view of determining the nature and extent of the problem there, what facilities were available for dealing with the situation, and the needs for the future. New Brunswick is one of seven provinces that have called upon the Canadian Hygienic Committee for assistance along these selfsame lines; and in many instances the advice of the committee has been accepted, and now two provinces are spending one and a half million dollars on mental hygiene activities. Thus, while more adequate facilities are being provided, more scientific treatment has also been made available; more preventive measures have been adopted and more custodial care supplied.

In three years the Canadian committee has inspected, outside of Toronto, thirty-six provincial and county hospitals for the insane, twenty jails, seventeen industrial homes, and eleven homes for dependents. The inspection involves a complete mental examination of all inmates with the making of all necessary tests. There have also been examined 2,405 children attending private schools, and 5,500 immigrants and 350 unmarried mothers. The findings have been presented to the various governments concerned with resulting needed changes. One of the particular presentments has been that concerning immigration; and the assurance may now be given that the Federal Department of Public Health is handling that aspect of the problem with intelligence and exactitude. For the first time in Canadian history physicians with a knowledge of psychiatry are inspecting immigrants at ports of entry, and within the last few months have rejected many with sufficient evidence of unsound mind to warrant their deportation.

It is interesting to note that several psychopathic hospitals are to be erected in various parts of Canada; and only recently the Ontario Government has acquired the Speedwell Military Hospital at Guelph for the purpose of additional accommodation for Ontario's insane. In the many new institutions shortly to be called into active service, cases of mental disease will be accepted as easily as are admitted into the wards of a general hospital those with physical derangements. They will be observed and treated for a limited period; and if the experience of the Winnipeg Psychopathic Hospital can be taken as a criterion, more than eighty per cent. can ultimately be returned to their own homes. Such practice will obviate the necessity of sending many to hospitals for the insane, with distress to friends and relatives alike, as well as obviating the horrible possibility of being confined in common jails with the criminal classes—a practice which might well be styled an anathema of any civilization. During the last three years the Canadian Mental Hygienic Committee has carried on its work on gifts of some $90,000, and its requirements for the next three years are estimated at $135,000. It is believed that Canada, with earnest effort, will soon have surmounted the problem of the mental defective, the dangers involved in neglect of this matter, and a saner, wiser policy of broad and universal adaptation to the needs of her unfortunates.

PHYSICIAN AUTHORS: DR. GEORGE CRABBE.

George Crabbe is practically unknown to readers of the present day, and literary reviewers have a hard time of it trying to explain why this is so. Why has a poet and realist of Crabbe's acknowledged skill gone so completely out of vogue—especially one who was praised with such unwonted enthusiasm as was Crabbe? "Though Nature's sternest painter, yet the best," said Byron. "His poems are the most touching in our language," said Cardinal Newman. "One of the masters and renovators of poetry," was Taine's verdict. "The Hogarth of modern bards," said Dibdin. "Crabbe's poems will last from their combined merit as poetry and truth," said Wordsworth. Edward Fitzgerald, of *Omar* fame, was even more ardent than these. Praise of Crabbe is scattered profusely throughout his many volumes of correspondence. Tennyson, Dickens, Macaulay, Jane Austen, Leslie Stephen—in fact, there is scarcely an English man of letters of the last hundred years who hasn't spoken his word of praise for Crabbe. He has been described as "the truest realist in the English language" and a "fine and genuine poet with a clear vision of life." Everybody who has read him puts him among the classics, but, alas! it is hard to find anybody who has read him.

Three outstanding reasons for Crabbe's lack of popularity, in face of all this encomium, have been advanced. First, he wrote in verse when he should have written novels. He could have been another Thomas Hardy. The author of *Tess of the D'Urbervilles* gives Crabbe the credit of having been the most potent influence that affected his work. Crabbe's forte was the novel, had he but known it. His poems are novels in verse—good stories that leave a vivid impression on the mind. "Crabbe's genius was unfortunate in finding no other vendible vehicle for his thought than verse," said Andrew Lang, "for his natural bent was the modern realistic novel on the squalor, sufferings and sins of the neglected rural poor." Lang touches upon the second principal reason for Crabbe's oblivion. His genius was "too grim and stern"; his gift, though perfect, was too sinister. And yet, his admirers will tell you there is buoyant humor and gaiety of heart in Crabbe's work. Sir Walter Scott on his deathbed said: "Read me some amusing thing; read me a bit of Crabbe," and chuckled and said "Splendid!" as it was being read. The last big reason for Crabbe's eclipse is that his style, as Taine points out, was too classical. His general literary form and manner hurt his popularity. Pope was his model. All his tales are written in the rhymed couplet of the Pope school. And so he was nicknamed "a Pope in worsted stockings." It has been said, also, that he diverges too much from the trend of modern thought. Somehow these explanations fail to explain, but the fact remains that Crabbe is little read. He is not, of course, wholly neglected. He has his little coterie of staunch admirers.: Oliver Elton optimistically says that "his day may ripen again." The chance of this seems remote. He is perhaps not destined to be popular again, but his place in English literature is secure, and for those who like poetical pictures of the grim and depressing side of life he can be safely recommended.

Crabbe was born on Christmas eve, 1754, in Aldeburgh, on the Suffolk coast, and died on February 3, 1832. His early life was one of bitter poverty. After a few years of schooling he began helping his father as a worker on the docks and in warehouses at Aldeburgh. At fourteen he was apprenticed to an apothecary and at fifteen was apprenticed to a surgeon. Later on he practised medicine and surgery in a humble way in Aldeburgh and Ipswich, but his success was small and his penury extreme. Again he became a warehouse laborer, but continued to study medicine and in 1777 went to London, where he spent nine months working in hospitals. In a letter to his sweetheart, Sarah Elmy, whom he always addressed as "Dearest Mira," he mentioned that he had to sell his surgical instruments to pay his bills. It is related that while in London he had a narrow escape from being haled before the Lord Mayor on a charge of being a resurrectionist. His landlady, while tidying his room, found the remains of a child which Crabbe had obtained for purposes of dissection, and thought it was the body of a child of her own who had died a fortnight before. Fortunately Crabbe happened to enter and was able to allay her fears, since the face of the infant had not been marred. After his London experience Crabbe again returned to Aldeburgh to practise, but again was unsuccessful, and in 1780 definitely abandoned medicine and went to London to try his luck in literature. At eighteen he had won a prize for a poem, *Hope,* published in *Wheeble's Magazine,* and a moral poem of his, *Inebriety,* had been published in 1775. He induced a London publisher to issue *The Candidate,* but it was a failure and Crabbe went hungry many a day.

It is said that "Dearest Mira," whom he married in 1883 after an engagement of eleven years, gave him some financial aid. In such desperate straits was Crabbe that he sought to enlist the aid of influential politicians. In this way Edmund Burke became interested in him, and secured the publication of *The Library* in 1781. Besides, Burke got Crabbe a "living" as an Anglican priest. He was ordained in August 1782, and through Burke's influence eventually became chaplain to the Duke of Rutland. His first successful poem was *The Village,* published in 1783. It was written to deride the idyllic sentimentalism of Goldsmith's *Deserted Village,* but *The Deserted Village* seems to have sustained the shock. His next was *The Newspaper.* Nothing more appeared until his *Poems* in 1807. These were followed by *The Parish Register,* in the same year, *The Borough,* three years later; *Tales* in 1812 and *Tales of The Hall* in 1819. A large number of other tales in verse, published posthumously, appear in his *Works.* His only prose writing was a few medical disquisitions of a minor nature.

UNREGARDED WARNINGS.

There is no post bellum for doctors, for theirs is an unending fight against greed, ignorance, and disease. One doctor who served during the war, in France, has had to take a post at a mining station in Mexico and says: "Bolshevist literature is being circulated among the soldiers urging them to combine with workmen to seize productive industries."

The seed is being sown. What is the mining company doing even to mend existing health conditions? Nothing. "There is no water near the mine, and no springs nor wells except on the other side of the mountain. The company brings water by railroad in tanks every day and fills the tanks at hospital and American homes at cost of about five hundred dollars a month. The poor Mexicans have no provision, and carry water for family use and for their animals from tanks about three or four miles away and pay two cents a bucket. Naturally there is little or no bathing, and I have seen them washing several garments in two quarts of water. Discontent is spreading. We may have some excitement here, as there is considerable bubonic plague about sixty miles down the valley. It has been gradually encroaching on the highlands from Tampico for about a year, and is slowly moving towards the interior. The company sent us some plague serum, but I have little confidence in it."

Here is a case of a competent medical officer hopelessly handicapped by insanitary conditions he, alone, cannot mend, and who sees trouble ahead in advancing plague. Added to this he sees Bolshevism threatening, not unnaturally, among natives who see rich mining companies take all they can get at the cheapest cost and leave the country worse for their coming.

EDUCATING THE STAFF.

It is not always realized that all light thrown on the condition of asylum and prison inmates must come from those on the staff, and in judging fairly a few reported cases of bullying or neglect it must be remembered that the nature of the insane and criminal, their dogged determination to annoy those in authority, their profanity, their obscene language and disgusting habits when such exist sorely try the patience of the most enthusiastic in reform. We are not speaking generally. There are many in an asylum who seem sane, many in a prison who appear not guilty.

How far education has influenced the staff of the New Jersey State Hospital can be seen by *The Psychogram,* issued monthly, and for which the patients write, not only write for, but print. The October number is specially good in its contributions and clear pictures, the whole number is cheery in its descriptions of the everyday happenings, its poems and sketches. Only those who have worked in an asylum can appreciate what it means to bring out a paper even with the sanest patients' help.

The same feeling of respect should be felt for those of the staff in the Minnesota State Prison, through whose care *The Mirror* is issued, and for which the prisoners write. The very ignorant often imagine the ordinary criminals as always intent on evil, the more charitable imagine them somewhat weak in intellect, whereas there are those who commit the most absurd and often atrocious crimes who cannot be classed as feebleminded; they may even be supernormal in mentality.

These humane efforts to improve the weary days of those detained within asylum and prison walls should be welcomed even by the mean man, for they will gradually save the State much money in taxes for institutional upkeep.

NOT WANTED.

We have had too much of problems being termed unsolvable. Those who deem one most so often know the remedy and will not apply it for fear of antagonizing property owners, politicians, the church or friends, and such men are now found urging that the impecunious tuberculous should not be sent to Texas as there are no advantages in the climate and light work is scarce. These socalled facts the various boards of health desire to have circulated with a view to deter newcomers. They have been faced with the problem of the impecunious tuberculous and this is their solution.

Now the truth is that with increasing knowledge of disease, property owners in Texan towns have begun to recognize the disadvantages of having a State sanatorium near their land, and even landladies advertise their rooms with a warning, "No tuberculous taken." As to advantages through climate, anyone who has lived at a place—say, El Paso—has known and seen what a sojourn there will do. How men who arrived limp, listless, wistful, have soon been able to sit on the plaza or even climb up on to the Meza. Moreover, the sanatoria for the rich just pile up evidence of its healing powers. As for light work, there is always plenty in a rising community, and the hundreds of wooden bungalows in course of erection in a new Texan town generally provides it. To guard a town against undesirable visitors is natural, often justifiable, but to use mendacity as a weapon is rather a low form of warfare. The problem is, in reality, not one at all, but merely a question how to keep up the price of land and property if a disease is allowed to hover and finally settle in the State. The answer is to have a frank declaration of how the settlers obtained their rights to lands. Part of the early procedure was to advertise the climate as health giving, and to disparage it when it came to a question of taxes for a State sanatorium, or when sufficient of the wealthy tuberculous had purchased land and settled there.

BURGLARY AND DENTISTRY.

In these days when science figures so largely in the work of detecting crime and often in the task of committing it, the burglars would do well to establish some evening lectures bearing on medicolegal work. Fagin, in *Oliver Twist,* had classes for the quick theft of handkerchiefs and jewelry, but the modern criminal is more intent on knowing about the manufacture of bombs and poisons and the distinction between human and animal blood smears. At any rate, a word of advice as to frequently seeing a good dentist might not be out of place. A burglar made a murderous attack on a bailiff and his wife in their lonely cottage, but escaped. A false tooth was found on the floor by the local policeman, who treasured it up, and, some time after, caught the man belonging to the tooth. Doubtless, the man thereafter sought a more skilled dentist.

◆

News Items.

Italians Plan Hospital.—On December 22d over two hundred Italian citizens of Brooklyn held a meeting for the purpose of starting a drive for the collection of $350,000 to build a hospital in Kings County.

Human Rabies in New York.—Six cases of human rabies were reported to the Department of Health of the City of New York during the years 1919 and 1920. They all occurred in children four years of age, and all were fatal.

Polish Doctors Victims of Typhus.—Cable dispatches from Warsaw state that Poland lost four hundred doctors from typhus fever last year. There are only 4,000 doctors now in the country, which has a population of 28,000,000.

Medical Monthly Changes Name.—With the December issue the name of the *Medical Council*, of Philadelphia, was changed to the *American Physician*. The publishers announce that the change is in name only, the organization remaining the same.

Professor Bumstead Dies on Train.—Dr. Henry A. Bumstead, professor of physics at Yale University, died on Friday evening, December 31st, on board the train while on his way to Washington from Chicago. He was fifty years of age. He was on leave of absence from Yale, serving as chairman of the National Research Council in Washington.

Western Surgical Association.—At the thirteenth annual meeting of this association, held recently in Pasadena, Calif., the following officers were elected: Dr. Charles D. Lockwood, of Pasadena, president; Dr. Harry Ritchie, of St. Paul, vice-president; Dr. Warren A. Dennis, of St. Paul, secretary (reelected). Next year's meeting will be held in St. Louis.

New Work for League of Red Cross Societies.—The Council of the League of Nations has requested the League of Red Cross Societies to supply the personnel and materials to protect the health of the international force which will go to Vilna to supervise the plebiscite to determine the sovereignty of that district. Colonel Henry A. Shaw, of Worcester, Mass., has been sent to Vilna to make the necessary arrangements.

Fatalities from Automobile Accidents in London.—Automobile vehicles of all classes killed fifty-one persons in London in November, 1920, compared with fifty in November, 1919. The London referred to is the metropolitan police district, which extends over a radius of fifteen miles from Charing Cross, and covers an area of roughly seven hundred square miles. About seventy per cent. of the casualties occurred in the day time, and thirty per cent. at night. Only two fatalities happened in November in the city proper, which is an area of just over a square mile around the Mansion House.

Typhus Fever on Ocean Liner.—A case of typhus fever was found on the steamship *United States* as the vessel left Copenhagen, Denmark, on November 18th. The patient, with four contacts, was removed from the vessel at Christiana, Norway, and the vessel sailed from that port for New York on November 19th.

Southern Gastroenterological Association.—At the annual meeting of the Southern Gastroenterological Association, held recently in Louisville, Ky., Dr. George M. Niles, of Atlanta, Ga., was elected president. Dr. Marvin H. Smith, of Jacksonville, Fla., was elected vice-president, and Dr. John W. Fitts, of Atlanta, reelected secretary and treasurer.

Physicians Needed for European Service.—The American Red Cross Society announces that the services of a number of medical men are needed among the children of Eastern Europe. It is said that the service is particularly suitable for recent graduates. The remuneration will be sufficient to represent an adequate salary and living expenses. The need is urgent, and all who are interested in this work are asked to communicate at once with Dr. Charles W. Berry, 44 East Twenty-third Street, New York.

Tri-State Medical Society.—The sixteenth annual meeting of the Tri-State Medical Society of Arkansas, Louisiana and Texas, was held recently at Texarkana, Texas. The following officers were elected: President, Dr. Frank H. Walke, of Shreveport, La.; vice-presidents, Dr. Leonce J. Kosminsky, of Texarkana, Ark., Dr. Spencer A. Collom, of Texarkana, Texas, and Dr. John A. Hendrick, of Shreveport, La.; secretary, Dr. Nettie Klein, of Texarkana, Texas. Shreveport, La., was chosen as the place for the 1921 meeting.

Infant Death Rate Falls in Great Britain.—The annual report for 1919 of the Registrar General for England and Wales shows fewer deaths now occurring in childhood. Death rates by far the lowest on record are shown for 1919 from measles and whooping cough, while the low death rate from diarrhea has only once been bettered. The death rate at most ages of life shows a tendency to decline, except in the case of cancer. The excess of infant deaths in London over the average for the country which was noted as an exceptional feature of the 1917 and 1918 figures has disappeared.

Certified Water.—Within the last twelve months the danger to railway travelers of infection with typhoid fever, dysentery, and other water borne diseases has been reduced to a minimum throughout the greater part of the country by the cooperation of the U. S. Public Health Service with the different state boards of health in the testing of the water used on railway trains for drinking and cooking. Within the next few months, similar protection will be afforded to passengers on river and lake steamers and to ocean steamships sailing from American ports. This will tend to end the severe outbreaks of typhoid fever that have from time to time been traced to ships (especially to excursion boats), as well as to the probably more numerous but far less easily traced illnesses of railway travelers from similar pollution.

Vital Statistics of New York.—During the fifty-two weeks of the year 1920 there were 72,874 deaths, corresponding to a rate of 11.90 in a thousand of population, compared with a total of 74,419 deaths and a rate of 12.39 in a thousand of population last year. During this period 11,279 infants died, a rate of 85 in a thousand births. During the corresponding period last year 10,639 infants died, a rate of 83 to a thousand births.

Demonstration of Radium Treatment of Cancer.—Under the auspices of the Health Department of the City of New York, a series of lectures will be delivered in New York during the month of January to emphasize the curability of many forms of cancer in the early stages by radium therapy. The object, as explained by Dr. Royal S. Copeland, health commissioner, is to allay the fear of surgery which, he believes, deters many persons from seeking treatment while the disease is in the incipient stage. It is announced that a radium expert will assist in the lectures, exhibiting some of the methods of radium therapy.

Surgeon Directs Operation by Wireless.—Dr. Patrick S. Burns, of Providence, R. I., chief surgeon on the Leyland liner *Winifredian,* directed by wireless the setting of broken bones and the care of internal injuries sustained by seamen on the Belgian steamship *Menapier* when that ship was battered by a hurricane. When an S. O. S. message from the Belgian steamship brought the *Winifredian* to her assistance, Dr. Burns attempted to put out in a life boat, but was prevented by the storm, so by wireless he directed the method of treatment in each case. The two ships lay alongside each other for three days, but the storm prevented any communication other than by wireless. At the end of that time the men were all reported as out of danger.

Resolutions on Death of Dr. Meltzer.—At a special meeting of the council for the New York Society for Thoracic Surgery, the following resolutions were adopted upon the death of Dr. Samuel J. Meltzer:

WHEREAS, On November 7, 1920, death removed from the roll of this society our distinguished colleague, Dr. Samuel J. Meltzer; and

WHEREAS, During his membership in this young association Dr. Meltzer has been an active worker and an ardent and enthusiastic supporter of the objects which called the society into being; and

WHEREAS, By his formal communications as well as by his illuminating discussions, in fact by his mere presence, he has been a continuous source of inspiration to its members; and

WHEREAS, His important discovery of overcoming the dangers of acute operative collapse of the lung by means of his world renowned "Intratracheal Insufflation" is an epoch making contribution to thoracic surgery; and

WHEREAS, Doctor Meltzer was honored with the office of first president of the American Association for Thoracic Surgery, the offspring of this society; therefore, be it

Resolved, That in the death of our colleague the New York Society for Thoracic Surgery has lost one of its most valued and beloved fellows; and be it further

Resolved, That these resolutions be spread upon the records of this society and a copy be forwarded to his bereaved family and to the medical journals.

HOWARD LILIENTHAL, M. D.
WILLY MEYER, M. D.,
WILLIAM H. LUCKETT, M. D.
CARL EGGERS, M. D., Secretary.

Motor Accidents in Chicago.—The total number of deaths in Chicago resulting from automobile accidents in the year 1920 is placed by Coroner Peter M. Hoffman at 559. That figure represents an increase of approximately twenty-five per cent. over the automobile deaths of 1919. In 1919, 420 persons met death in motor crashes. In 1918 the number of fatalities resulting from automobile accidents was 374. In the year just passed 5,757 coroner's cases were presented to Mr. Hoffman. Of that number physicians issued 2,144 death certificates. The remaining 3,613 cases required coroner's inquests, and one seventh of them were automobile deaths.

Meetings of Local Medical Societies.—During the coming week the following medical societies will meet in New York:

MONDAY, *January 10th.*—Society of Medical Jurisprudence; New York Ophthalmological Society (annual); Yorkville Medical Society; Association of Alumni of St. Mary's Hospital, Brooklyn; Williamsburg Medical Society.

TUESDAY, *January 11th.*—New York Academy of Medicine (Section in Neurology and Psychiatry); Manhattan Dermatological Society; New York Obstetrical Society; Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

WEDNESDAY, *January 12th.*—Medical Society of the Borough of the Bronx (annual); New York Pathological Society; New York Surgical Society; Alumni Association of Norwegian Hospital; Brooklyn Medical Association.

THURSDAY, *January 13th.*—New York Academy of Medicine (Section in Pediatrics); West End Clinical Society; Brooklyn Pathological Society.

FRIDAY, *January 14th.*—New York Academy of Medicine (Section in Otology); Eastern Medical Society of the City of New York; Flatbush Medical Society; Society of Externs of the German Hospital in Brooklyn.

◆

Died.

BAXTER.—In Somersworth, N. H., on Monday, December 27th, Dr. Hemon Baxter, aged eighty-eight years.

DAVIS.—In Lamanda Park, Cal., on Thursday, December 23rd, Dr. Nathan Smith Davis, of Chicago, Ill., aged sixty-two years.

FREEMAN.—In Philadelphia, Pa., on Monday, December 20th, Dr. Walter J. Freeman, aged sixty years.

GRANT.—In Lynn, Mass., on Tuesday, December 28th, Dr. James H. Grant, aged seventy years.

HERSHMAN.—In Alliance, Neb., on Monday, December 20th, Dr. Charles E. Hershman, aged thirty-five years.

KIMBALL.—In Boston, Mass., on Tuesday, December 28th, Dr. Samuel A. Kimball, aged sixty-three years.

DE KRAFT.—In Greenwich, Conn., on Friday, December 24th, Dr. Sarah L. De Kraft, aged eighty-seven years.

KUNKEL.—In Salamanca, N. J., on Saturday, December 18th, Dr. Oscar F. Kunkel, aged forty years.

LOCKRIDGE.—In Ronceverte, W. Va., on Friday, December 17th, Dr. James P. Lockridge, of Minnehaha Springs, W. Va., aged fifty-eight years.

MILLS.—In Missoula, Mont., on Monday, December 6th, Dr. William P. Mills, aged sixty-three years.

MCMILLAN.—In New Egypt, N. J., on Friday, December 17th, Dr. William T. McMillan, aged fifty-two years.

O'BRIEN.—In Ashland, Wis., on Monday, December 20th, Dr. William T. O'Brien, aged fifty-nine years.

PAGE.—In Bel Air, Md., on Wednesday, December 22nd, Dr. Robert S. Page, aged forty-six years.

TAYLOR.—In Ridley Park, Pa., on Sunday, December 26th, Dr. Horace Furness Taylor, aged thirty-nine years.

WALLACE.—In Newport, Wash., on Tuesday, December 21st, Dr. Walter S. Wallace, aged thirty-seven years.

Book Reviews

MANUALS ON DIABETES.

Patient's Handbook on the Treatment of Diabetes Mellitus. By Thomas W. Edgar, M. D., Associate Editor on Diabetes, *Western Medical Times*; Author of *Psychology of Prognosis, Limitation of Starvation in Diabetes,* etc. Boston: Richard G. Badger, 1920. Pp. 100.

Diabetes. A Handbook for Physicians and Their Patients. By Philip Horowitz, M. D. With Twenty-seven Text Illustrations and Two Colored Plates. New York: Paul B. Hoeber, 1920. Pp. xii-196.

Neuvas Orientaciones Sobre la Patogenia y Tratamiento de la Diabetes Insipida. Par Dr. Gregorio Marañón, de Hospital General. Madrid: Editorial Saturnino Calleia S. A., 1920. Pp. 13, 174.

Much progress has been made in the treatment of diabetes. The manuals reviewed here have been written by specialists whose names are familiar to the readers of the New York Medical Journal. For this reason these books should be of special interest to our readers.

* * *

Most medical writers take us back to Hippocrates, but, in this case, he had nothing to say about diabetes, so the reader of Edgar's book is hurried on to a species of mortuary in which 11,775 persons lie dead of diabetes (1915), which makes him timorously inquire what brought them there, what predisposed them to so grim a fate. No age, no class, is exempt, answers the author gloomily. Has lovely woman no exemption? Yes, slightly beyond the man. Has race any exemption? The Jews are particularly susceptible. Does heredity play any part? More in environment and association than by being a predisposing factor. Infection? It disclaims any share. Dr. Edgar thinks nervous influences a strong determining factor, also head injuries, typhoid, diphtheria, rheumatism, and sometimes syphilis.

Among theories as to the cause, Edgar gives his own, saying it is a complication of chronic intestinal stasis. The toxins formed in the intestinal track due to fermentation and putrefaction of carbohydrates and proteids in time cause a degeneration of the glandular structures with a resultant retardation of function causing the body to lose its power to care for its sugar content. He considers the disease not primarily one of the pancreas but of the entire ductless gland system. Other glands than the pancreas are concerned in sugar metabolism, and when the secretion of one or more is interfered with diabetes follows. Sugar in the urine often causes needless worry. The amount the patient is able to assimilate is the safest indication of severity.

No drugs figure in Edgar's treatment, but one thing will meet favor with some: he believes in alcohol when the diet is being reduced as it acts as a fat sparer and has direct value as food. Alcohol is ideal in that it is entirely oxidized, leaving no byproducts harmful to metabolism.

For the past year the author has been using a serum derived from the blood of rabbits, also an infusion derived from a plant which grows in Southern Italy in December and January. It is a kind of nettle, and its action is to cause oxidation in the body and make the sugar disappear. There is a graduated series of diet charts which would be attractive to any invalid. No bread on the menu, but bran cakes, made from stable bran, are permitted. A word of warning is given against the deceptive appearance of the healthy diabetic who is a whited sepulchre despite his ruddy cheeks. Boasting of his power to defy dietetic rules and yet preserve health, he one day feels drowsy, shortwinded, comatose, and heads for the tomb while the doctors sadly sigh, "We told you so." From such a fate may common sense and Edgar's helpful volume deliver us.

* * *

Anyone who has passed an hour or two in the consulting room of an internist knows the frequent inquiries which come from fussy or disconsolate patients over the telephone, particularly from diabetics, imploring permission to eat a little forbidden food, or, complaining of pain, and being questioned, reluctantly admit that they have eaten to test their improved health or because they would not appear unsociable. The doctor sees no difference between suicide with a lobster salad and bichloride of mercury, since the effect of each is understood by the diabetic.

Dr. Horowitz, suffering like his confrères from unreasonable and disobedient patients, has tried to mend matters by taking them into his confidence. He has exposed the mechanism of life and the causes of disharmony, the reasons for prohibition of some foods, the nutritive excellence of others. He has given simple tests for sugar which the patient himself can make. This will keep a sick one interested, for ninety-nine per cent. find their own insides a fascinating study. To the normal, healthy person who shovels food down in an absent minded fashion and thinks calories and vitamines are some form of disease, the diet charts seem both liberal and varied. Allowance is made for idiosyncrasies in food, extra portions are allowed as soon as they can safely be taken. One day a week is a Green Day, which simply means extra green vegetables and is not to be confounded with Arbor Day or Irish demonstrations.

The author, though assured of the value of cultures of Bacillus bulgaricus, does not say it is as a cure, but says it helps to take care of and neutralize an existing autotoxemia and increases the time necessary for starch to be converted into dextrose or glucose, so that smaller quantities of glucose are formed in a given time. Large doses are found to produce the best results.

Diabetes, nephritis, arteriosclerosis, gout, and other forms of metabolic disturbance are ascribed to a form of autointoxication causing an interference with the functions of the ductless glands, or irritation of these and other organs. This statement is based on personal research and animal experimentation and is enlarged on in the book. There are excellent tested menus, recipes and analyses of food which will help the tired doctor and secure the cooperation of the doctored. The section on Juvenile Diabetes will be useful to mothers and nurses in the difficult task of coaxing a child to eat what he does not fancy. Any diabetic who reads the clear directions and warnings can no longer plead ignorance in provoking symptoms he is unable to relieve.

* * *

Dr. Maranón has written a very valuable and complete treatise on diabetes insipida, with a bibliography which pretends to be complete on the subject; inasmuch as the references number one hundred and forty-six, this claim to completeness seems justified. The essence of the author's views on the pathogeny of the disease may be said to be found in his conclusions stated at the end of the first chapter, namely, "almost absolutely all cases of diabetes insipida present symptoms which demonstrate the existence of a hypofunctional lesion of the middle and posterior lobes of the hypophysis."

Consequently, his treatment is directed along the lines of supplying this deficiency in function of the pituitary gland. In this regard he is convinced of the inefficaciousness of drugs, restriction of fluids, salt free or low nitrogenous diets, hydrotherapy or electricity; however, in those cases which show an evident hypertonia of the vagus, belladonna and atropine have been partly useful. Pituitary extract has been used by Maranón with uniform success, administered both hypodermically and by mouth; whether a true cure can be effected remains to be seen, although this may be hoped for in a certain proportion of cases, always remembering that tumors of the hypophysis must be treated surgically.

HOOKWORM AND MALARIA.

Hookworm and Malaria Research in Malaya, Java, and the Fiji Islands. Report of the Uncinariasis Commission to the Orient, 1915-1917. By S. T. Darling, M. D., M. A. Barber, Ph. D., and H. P. Hacker, M. D. Publication No. 9. New York: The Rockefeller Foundation International Health Board, 1920. Pp. x-191.

Parasites have been written about since earliest antiquity; the commonest were known to the Egyptians, and we may believe that all early peoples, civilized or savage, knew a great deal about them, for hygiene as it figured in their religion deals much with precautions against them. So, to these men the sight of great scientists setting out on a far voyage to fight a worm, a fly, an ameba, and, returning some years after, not wholly victorious, would have seemed quite a necessary thing.

In this report are garnered two years' work, and some excellent pictures of the people who regard precautions as petty tyranny, and wash themselves, their clothes, their rice, in the same water, even defecating if convenient. It was not a matter of surprise that one place, Batavia, Java, had an incidence of ninety-five and two tenths per cent. with average number of worms forty-nine.

The commission had a heavy task in examining Chinese, Tamils, Fijians, Malays, Indians, and others, because the susceptibility varied, the health conditions varied, and certainly ideas varied among the people as to the use of worrying. Even the vulnerability of the worms in relation to vermicide varied. Chenopodium was the usual antidote, but the Ancylostoma duodenale, a species of which the Chinese had the larger proportion, had the mouth part larger than the Necator. The anatomical difference would enable the former to inflict more serious wounds in the mucosa, and cause greater anemia and required higher doses of vermicide. It was found well to express the hookworm species formula in percentages of ancylostoma, because that indicates the necessity of the higher dose.

Seeing the many variations, it is impossible to quote adequately concerning hookworm and malaria. The report is so concise, so anxious to inform, that the interested man will hurry to order it. The reading raises a doubt as to the real meekness of mortal man in calling himself a worm, even a vile one, seeing its power to torment and kill, while the wicked worm must curl up in laughter at the abortive efforts to get rid of him.

THE INDUSTRIAL CLINIC.

The Industrial Clinic. A Handbook Dealing with Health in Work. By Several Writers. Edited by Edgar L. Collis, M. D. (Oxon.), M. R. C. P.; Talbot Professor of Preventive Medicine in the University of Wales; Late Director of Welfare and Health, Ministry of Munitions, and H. M. Medical Inspector of Factories. Modern Clinic Manuals. New York: William Wood & Co., 1920. Pp. xii-239.

The "several writers" certainly have done their work well, but those with an unthinking mind would do well to avoid this volume, be they employers or employed, for no one can gain knowledge without increase of responsibility; theirs is then the sin of those who know the right and do it not. The employer may no longer consider his workpeople as hands, or a staff, or a gang or shift: they are men and women with brain and heart, stomach and lungs, and emotions, as he himself has. He may still continue to engage hands, but those same hands, influenced by socialist meetings and poor cooking, bad air, and the lack of a tubbing, now yield ugly missiles, vocal and instrumental, for retaliation when consideration by the employer is lacking.

Doctors, economists, theologians, philanthropists, are urging the employer to this duty because of the increased output of work it will eventually mean, and the gradual, sobbing subsidence of the waves of the high sea of revolt. There will also be the social, civic distinction of being a model employer discountenancing greed and graft, petty tyranny, and selfish neglect.

But he has the uphill task of contending against suspicion and ignorance. "Just to get more work out of us," growl the people. "Spying on us with his blooming tests. The other day old Bill was laid off; too slow, not up to new machinery, and, unknowing, his own young daughter got the job." Then, those for whom gloves and masks, spectacles and special overalls, are provided, are the very ones not to use them. The precautions worry them, and, after all, they may not be the next ones to suffer.

Now, granted that the boss has advertised for, selected, and suitably placed the new hand, our several writers press around and say he must not overwork him; must give him well ventilated, well warmed workrooms; must eliminate or guard against the use or incurrence of things dangerous to health; must provide a medical officer, and, where possible, a canteen, cloak rooms, adequate toilets. The employer has a hard task. Let him be thankful his liabilities do not yet extend as far as suitable housing.

And do these men write only for employers? No; for any who are concerned, voluntarily or involuntarily, with the great world of labor. They begin with treating the engagement of the worker on medical and psychological grounds, then industrial efficiency, fatigue, environmental and personal hygiene, ambulance and first aid work, physiology, and economy of food supply; finally, the employment of women. They ask for chief auditors of their book, factory medical officers and welfare workers.

The material has been carefully gathered by well known men. Dr. Leonard Hill writes clearly and usefully on Food Values in Relation to Occupation. All the men were daily using their energies during the war, and are not writing merely to make a book but to make men.

THE NERVOUS HOUSEWIFE.

The Nervous Housewife. By ABRAHAM MYERSON. Boston: Little, Brown & Co., 1920. Pp. 273.

Long ago, B. C., there were bitter complaints about women; living with a scold was like "a perpetual dripping on a very rainy day"; they beguiled the hundred per cent. young men from virtue's path. They liked walking about Fifth Avenue, Jerusalem, in "changeable suits of apparel," mantles, hoods and veils, crisping pins, ornaments on their legs, chains and bracelets. They were sly and subtle Rachaels and Delilahs, liking to mix up with politics as did Jezebel and Herodias, or to singing Socialist songs, like the Virgin Mary. Curiously, the men did not see anything unwomanly in the deeds of a Jael or Judith or any such stern minded woman. Taking century long strides through the ages, we find there were always men who said there never was a time like that present,. with women so ab-so-lute-ly frivolous and damaging. Roger Ascham was doubtful of any good at all in them; Thackeray deluged them with cynicism; Kipling's poem is as bad as Solomon's doleful reproaches, and he certainly saw plenty of them. That famous answer to the query, "Who can find a virtuous woman?" ascribed to Solomon, was written by one of the Mrs. Solomons, and taught to her son, Lemuel.

Here we are, then, in 1920, with all the world whirling more swiftly, with manners and customs changed, with no doors closed to the independent young women, expecting her to settle down in humble flat or maisonette and find full joy in domesticities. Even in 1817 she was condemned for seeking inky diversion, for Lady Morgan was thus addressed in the *Morning Post:*

> Lady, lay down the pen; take up the needle.
>   Mend shifts or stockings: darn, a decent sight.
> But, if thou can'st not sew, thrum tweedle-deedle.
>   In short, fair dame, do anything but write.

There is found in Dr. Myerson's book neither condemnation nor mockery, but a sympathetic comprehension of that which makes nervous housewives. One disturbing element is the nonconfluence of two ideas: one that marriage implies the dependence and essential inferiority of woman, the other that the man and woman are equal partners in the relationship. When this question is settled, the home will be reorganized in relation to the new belief. It has also to be borne in mind that the child, too, has changed. The mother has to deal with a more alert, more sophisticated, more sensuous child, and tots of five years are sent to the kindergarten because they wear their mothers out. Restricted childbearing is prevailing more and more; had the woman of the past known how, she also would have had fewer children; but the author speaks plainly and wisely on the other side—sterility. The chapter on The Nature of Nervousness will enlighten the young wife who regards neurasthenic, neurotic, psychasthenic, hysteric, as interchangeable terms. In The Types of Housewife Predisposed to Nervousness, the wife may find her own picture; she has plenty to choose from. There is the fussy woman, the jealous, the hypersensitive, the ultrameek inwardly rebellious, the nagging, the hysterical, the dreamer. But it is just to say that the author deals with these same conditions as occurring in husbands. Conditions arising from original sin or constipation, from too much conscience or too much candy, from deadly dullness or amusement saturation, are thoroughly sifted; also the more serious one of the lack of passion and the quick divorce.

Every sensible woman will take her just share of blame as she reads; every foolish one will demand her share of excusation; every husband will take new views of life and his wife.

New Publications Received.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

THE SILENT MILL. By HERMANN SUDERMANN. New York: Brentano's 1920. Pp. 204.

LAOTZU'S TAO and WU WEI. Translated by DWIGHT GODDARD. New York: Brentano's, 1920. Pp. 116.

THE STORY OF A STYLE. By WILLIAM BAYARD HALE. New York: B. W. Huebsch, Inc., 1920. Pp. 303.

BERGSON AND PERSONAL REALISM. By RALPH TYLER FLEWELLING, Professor of Philosophy in the University of Southern California. New York, Cincinnati: The Abingdon Press, 1920. Pp. 304.

PRAKTIKUM DER KLINISCHEN CHEMISCHEN, MIKROSKOPISCHEN UND BAKTERIOLOGISCHEN UNTERSUCHUNGSMETHODEN. Von Dr. M. KLOPSTOCK, San-Rat, und Dr. A. KOWARSKY in Berlin. Sechste, umgearbeitete und vermehrte Auflage. Mit 40 Textabbildungen und 24 farbigen Tafeln. Berlin, Wien: Urban & Schwarzenberg, 1920. Seiten, xv-518.

COMMON INFECTIONS OF THE KIDNEYS WITH THE COLON BACILLUS AND ALLIED BACTERIA. Based on a Course of Lectures Delivered at the London Hospital. By FRANK KIDD, M.B., B.C. (Cantab.), F.R.C.S. Eng., Surgeon of London Hospital; Surgeon-in-Charge of Genitourinary Department, London Hospital; Member of the International Society of Urology, etc. With an Additional Lecture on the Bacteriology of the Urine by Dr. Philip Panton, Clinical Pathologist, London Hospital. London: Henry Frowde (Oxford University Press) and Hodder and Stoughton, 1920. Pp. xx-331.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Treatment of Tumors of the Female Bladder.—William Neill (*American Journal of Surgery,* December, 1920) states that the method of treatment during the past five years has drawn further and further away from any operative procedure, except in the cases of massive tumors. The treatments can be given with great ease and accuracy through the Kelly cystoscope. The best results have been obtained by the use of radium. The flat tumors with broad sessile bases are treated by implanting (or shooting) directly into the tumor, tiny capillary glass tubes containing from three to five ma. of the radium emanation, which are left permanently, and which give a tremendous radiation throughout a long period. From one to several of these spicules may be implanted, depending on the size of the growth. This form of treatment should never be repeated under four to six weeks. In association with this method and also for the smaller definitely pedunculated tumors the emanation attached to a sound and encased in a brass or platinum capsule is used, which is held directly on the tumor. For this the equivalent of one gram of radium in the form of emanation and on an average of from five to ten minutes on each existing tumor is used. Such cases are ambulatory or office patients and are examined and treated on an average of once a week for from four to five weeks. At the end of that period all treatments are discontinued and the patient allowed to go off for six weeks. Then another examination is made and the treatments again instituted, depending on the amount of trouble remaining. With this method of treatment, instead of putting the patients to bed and exposing them to the risks and discomforts of an operation, they are handled simply as office cases, and in the meantime they lead their regular lives at home. Patients are never discharged as cured, but even after the last vestige of trouble has disappeared they are instructed to report at regular intervals for examination. The tendency to recurrence is so great that in this way the recurrence is treated as soon as it becomes evident.

Treatment of Persistent Bone Sinuses.—Charles William Peabody (*Surgery, Gynecology and Obstetrics,* November, 1920) states that in the year following the armistice about five hundred cases of bone sinuses following gunshot wounds came under observation for varying periods of time. These had presented an unusually stubborn surgical problem and in spite of prolonged surgical treatment little progress was being made toward a cure. From treatment of about half of these a procedure was evolved which led to the clinical cure of the great majority. It was found that the presence of an infected bony cavity was the essential cause; that a revision operation sufficiently radical entirely to eliminate this faulty configuration was the first step required; that the concomitant infection could be effectively controlled and terminated in a comparatively brief time by careful wound treatment based on physiological and antiseptic grounds. It thereby became possible, as well as desirable from the functional viewpoint, to close these wounds by a bold reconstruction operation.

Persistent bone sinuses are a very common and a very serious complication of gunshot wounds producing compound, comminuted fractures, unusually resistant to ordinary surgical treatment. A system of operative and postoperative procedure directed against the underlying etiological factors has been devised after considerable experience which in a high percentage produces a clinical cure. Such a method must stand the further test of late results before it can be regarded as the means of permanent cure in every case.

Treatment of Stricture.—A. Ravogli (*American Journal of Surgery,* December, 1920) states that the treatment of urethral stricture has for its aim the enlargement of the lumen of the urethra and maintaining its enlarged calibre by dilatation. Dilatation is effected gradually and gently by the use of sounds, which, massaging the scar tissue of the urethra, causes its absorption. The maximum of effect should be produced by the minimum of effort, for the effect is due not to the pressure of the sound, but to its mere contact. Passing a sound by force, will tear and bruise the mucous membrane and consequently increase the inflammatory reaction. A steel sound must go in without effort. In this way the presence of the sound will be able to lessen the congestion at the point of contact, correct the irregularities in the canal and stimulate the deeper tissues to a reaction so as to soften the cicatrix. The method of forced dilatation and of divulsion, which some years ago were largely applied with serious consequences, have been abandoned. When the stricture is yet soft or in a semifibrous stage, it can be easily removed by prompting the reabsorption of the infiltrated elements by means of gradual dilatation.

Treatment of Urethral Stricture.—Edgar G. Ballenger and Omar F. Elder (*American Journal of Surgery,* December, 1920) state that the best method of treatment is by gradual dilatation with sounds and the Kollmann dilator until the urethra has been dilated to a size considerably larger than normal in order to allow for the contraction that will follow later. The dilatations may be given with intervals of one to five days according to the reaction which follows. As a rule, the urethra should not be dilated again until the irritation of the previous treatment has subsided. The dilatation should be gradual, because overdilatation at any one time is undesirable for the obvious reason that if the damage to the constriction is gross or massive, it will be repaired by scar tissue and the stricture will ultimately be made worse. The object in dilating the constriction is to cause a necrosis of the most constricting fibres by damage so slight that it will not be repaired by scar tissue but will undergo absorption, thereby lessening the constriction. It may become necessary or advisable to perform an internal urethrotomy which is the plan to follow in incising strictures in the anterior urethra. Too much hemorrhage is likely to follow if this operation is done in the deep urethra, the external perineal urethrotomy is the operation of choice in this region. The following are some of the reasons for incising urethral strictures; resilient ones which quickly recontract after dilatations; those which for other reasons do not respond in a reasonable time to adequate dilatations; strictures too extensive or too tight for gradual dilatation; and occasionally where the patient lives in a place too remote from a surgeon to employ the dilating method.

External perineal urethrotomy is indicated in tight or resilient strictures of the deeper part of the urethra, that is, in the region near the external sphincter; furthermore, this operation is required where there is complete or nearly complete obstruction of the urine; for infiltration of urine and where there is stone in the bladder complicating the stricture. It is of great importance to pass an instrument or a filiform through the urethra into the bladder to act as a guide in incising the constriction. This should be done before the anesthesia is started. The perineal incision is made down to the point of the instrument in the deep urethra, then a probe pointed gorget is passed through the stricture into the bladder. When unable to pass an instrument, we have recourse to one of two methods. First: Bore through the stricture with the forefinger until the stricture is passed. Second: Suprapubic cystotomy should be performed and the dilated part of the urethra back of the stricture found by retrograde sounding. A large catheter is fixed in the urethra after external perineal urethotomy and allowed to remain in the urethra for ten days. The bladder is irrigated daily through the catheter with a saturated solution of boric acid. Subsequent dilatation should be followed as in dealing with ordinary dilatable strictures.

Treatment of Ruptured Urethra.—J. Richard Allison (*Military Surgeon,* September, 1920) concludes as follows:

1. When the diagnosis of rupture of the urethra has been made whether complicated by fracture of the pelvis, ruptured bladder or what not, a perineal section should be done immediately.
2. A suprapubic operation should not be done unless it has been found by examination that the bladder wall is ruptured and then only for repair of the bladder wall.
3. A suprapubic operation should not be done merely for retrograde catheterization until the operator has failed after diligent search to find the proximal end of the urethra.
4. The torn ends of the urethra should be sutured with as good anatomical approximation as possible.
5. The catheter should be left in the urethra until the wound is healed sufficiently to prevent a perineal fistula.
6. The aftercare should always be considered the important point in obtaining good results.
7. Sounds should be passed two or three days after the catheter is removed, and then at intervals for a long period depending upon the nature of the stricture.

Treatment of Suppurative Cystitis.—Augustus V. Wendel (*American Journal of Surgery,* December, 1920) asserts that the most important elements in the treatment of purulent cystitis are to keep the bladder continuously clean and to improve the nutrition of the local tissues. The vesical membrane being more or less ulcerated and covered with firmly adherent mucopurulent masses, often incrustations, the futility of irrigations, as ordinarily administered, becomes evident. Such bladders are therefore cauterized with solid silver nitrate, fulgurated and burned with the actual cautery practically through the whole thickness of the bladder wall, but very few are cured because such efforts are circumscribed.

Treatment of Wounds of Knee Joint.—W. B. Owen (*American Journal of Surgery,* August, 1920) gives the following conclusions in regard to the Willems method of treatment: 1. All surgical methods of draining the knee joint in suppurative arthritis have certain drawbacks. 2. The Willems method in suppurative arthritis produces free drainage of pus, promotes circulation of synovial fluid with maximum power of resistance, and stimulates blood supply to the joint. 3. The practical requirements of treatment are: a, free drainage, and, b, active movement. 4. Reports have shown that in about fifty per cent. of the cases treated a useful mobile joint has been obtained. 5. The Willems method should not be employed if delayed until the fulminating stage has been reached.

Treatment of Old Hip Dislocations by Reduction.—J. J. Buchanan (*Surgery, Gynecology and Obstetrics,* November, 1920) states that: 1. Traumatic hip dislocations may be considered old at the end of four weeks. 2. Reduction by manipulation is rarely successful after that time, owing to formation of connective tissue, which fills the acetabulum and binds down the head and neck. 3. Reduction by open incision is to be preferred in nearly all cases of old hip luxations and with modern methods is attended with but little danger. 4. Preliminary traction by Buck's extension is of advantage. 5. The actual replacement of the head, after the acetabulum has been emptied and the head and neck released, is best accomplished by manipulation or the use of levers with manual and body traction. 6. The result is often ideal and, in the cases reported, has been good in eighty per cent.

Management of Foot Abnormalities.—Tom S. Mebane (*Military Surgeon,* October, 1920) states that from the experience gained in dealing with large numbers of men in the Army camps, the following conclusions may be drawn: A foot may be considered normal when there is unrestricted joint motion and the line of weight bearing passes through the fore foot. Foot trouble can be prevented by wearing proper shoes, by correcting faulty attitudes, by care to prevent overtaxing, by eliminating focal infections and by the use of exercises to strengthen the foot muscles. Symptoms referred to the feet are encountered in many conditions. The cure of static foot defects is dependent upon muscle training. Mechanical correction is to be regarded only as an aid to treatment.

Treatment of Wrist Injuries.—Mauchet and Mauchet (*American Journal of Surgery,* August, 1920) state that retrolunar luxation of the carpus demands reduction, like all other dislocations, even when associated with fracture of a carpal bone, or nerve lesions. The only possible danger in reduction exists in those cases where the semilunar is dislocated 90°, or where the lesion has existed for more than a month. But even if intervention is delayed for more than a month, reduction is feasible and effectual. It should be done under general anesthesia. The surgeon should grasp the hand of the patient firmly, and exert traction in the direction of the axis of the forearm, at the same time moving the wrist slightly so as to make it supple. The hand is then brought into dorsal flexion, while traction is maintained and inclined slightly to the ulnar side. At the same time, pressure is exerted gently with the thumb over the palmar surface of the semilunar. Finally, the surgeon moves the hand quickly from dorsal to palmar flexion. During this manipulation the semilunar may be felt slipping into place. This is followed by immobilization for four or five days, hot baths, hot air, gentle and slow mobilization. In case the semilunar is fractured, or the condition has lasted more than one month, reduction should not be attempted; the semilunar should be removed under local anesthesia, with the superior fragment of the scaphoid, if fractured. The incision is made on the palmar surface just within the palmaris longus.

Infective Neuronitis.—Foster Kennedy (*Archives of Neurology and Psychiatry,* December, 1919) observed several cases having many of the recognizable symptoms of acute polyneuritis, that presented unmistakable evidences of involvement of the spinal roots and of the central nervous system as well. In some of the earlier cases the main incidences of the disease fell peripherally, with occasional signs of root involvement, produced probably by ascending lymphogenous extension. One case emphasized the necessity of including more than the peripheral change in the conception held of the condition as a morbid entity. A study of the sections revealed a patchy neuritis in the peripheral nerves, and a degeneration of the cells in the ventral and dorsal cornua, and especially in the cells of the posterior ganglions. Similar but more benign changes were found in the deeper layers of the cerebral cortex and in the cells of the pontine nuclei. A small round cell infiltration was found around the ganglion and cornual cells, but never around the meningeal vessels as is usual in poliomyelitis. The ependyma of the spinal central canal showed constant extensive proliferation. The meninges were normal. Small quantities of an emulsion of the affected spinal cord preserved in glycerine injected into monkeys subdurally produced the disease clinically after an incubation period of from five to seven weeks, and histological examination of the nervous tissue of these animals revealed the same conditions as found in man. The disease was further produced by inoculations from monkey to monkey. Nervous tissue from fatal cases and also from monkeys affected with the disease were investigated bacteriologically and positive results were secured. Minute rounded bodies were found which were arranged irregularly or in pairs. This organism inoculated subdurally in the monkey reproduced the disease clinically and pathologically, and was recovered later from the cerebral cortex, a consideration that gave emphasis to the present contention that the problem was one of a widespread neuronic infection.

The Value of Large Single Doses of Digitalis in the Treatment of Heart Disease.—G. Canby Robinson (*Southern Medical Journal,* June, 1920) advocates the administration of the tincture of digitalis in large single doses as a useful method of treatment in certain cases of heart disease, provided the tincture is standardized, the dose regulated, and the patient kept under close observation. This method not only brings the heart rapidly under the influence of the drug, but also affords a more accurate means of studying its effect than the older methods of small repeated doses. The use of large single doses is apparently not dangerous under specified conditions. Problems of the relation of dose to body weight still need solution. The beneficial effect of digitalis in cases with cardiac irregularity caused by auricular fibrillation is especially emphasized by experience with large single doses in this condition.

Blood Transfusion.—E. R. Arn (*Ohio State Medical Journal,* August, 1920) concludes that salt solution will not raise the blood pressure the second time. Transfusion of blood alone will save the patient. The citrate method is the method of choice, because of the ease of application and preservation of important blood vessels for future transfusions or other intravenous therapy, should occasion require. Transfusion is a specific for hemorrhage in the newborn. In hemorrhagic diseases it will replace blood loss, stop the hemorrhage, but not cure the condition. Transfusion saves delay and decreases mortality in cases with secondary anemia requiring operation, such as fibroid tumors and jaundice. Transfusion of blood opens a new field of therapy in the treatment of chronic infections. Most reactions can be averted by making correct group tests and transfusing from the same group except in extreme emergencies.

Diagnostic Significance of Inspiratory Movements of the Costal Margins.—C. F. Hoover (*American Journal of the Medical Sciences,* May, 1920) says that in interpreting the inspiratory movements of the costal margins one must study the symmetry and asymmetry not only of the entire costal margins, but of the inner and outer portions of each costal margin. Movements of these margins are modified with changes in the curve of the plane of the diaphragm, by paresis of either the diaphragm or the intercostal muscles, and by synechia between the diaphgram and the thoracic wall. Such studies improve the accuracy with which one differentiates between infraphrenic and supraphrenic disease, and enable one also to estimate the conformation of the heart and the size of the pericardial sac, and to differentiate between lesions which cause phrenic displacement and those which do not modify the plane of the diaphragm.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Park, Ill., May 31, June 1 and 2, 1920.

The President, Dr. THOMAS S. SOUTHWORTH, of New York, in the Chair.

(Continued from page 44.)

Blood Findings in a Child Five Years After Splenectomy.—Dr. HOWARD CHILDS CARPENTER, of Philadelphia, presented in detail the average results of thirteen blood examinations in a white boy, ten years of age, who had had his spleen removed five years before for familial hemolytic icterus of the Chauffard-Minowski type. The result of the operation was satisfactory, and the case was reported in the literature a few months later. The child's present condition showed him to be an active, intelligent child of nervous temperament, with good muscular development and scant adipose tissue. He was six pounds under weight for his height and age, had a faint mitral regurgitant murmur, with no demonstrable hypertrophy. The thyroid was not enlarged, and there was no jaundice or ascites. The external lymphatic glands were moderately enlarged. The tonsils were enormously hypertrophied. The average of the thirteen blood examinations made during the last six weeks showed hemoglobin eighty-two per cent., red cells 4,288,000, and white cells 15,000. No Howell-Jolly bodies were found. Prior to operation the hemoglobin was as low as twenty-three per cent., and the red cells were down to 2,020,000. There was still present evidence of bone marrow regeneration, as shown by the high color index, the continued leucocytosis, moderate chromatophilia and poikilocytosis, high transitional and eosinophile counts, and finally reticulation of the erythrocytes. There was an unusually quick coagulation time in spite of a rather low platelet count, indicating in this case either a rapid availability of the platelets for the purposes of coagulation or an increased amount of prothrombin in the platelets, or a large percentage of macroplatelets. The low platelet count was simply the continuation of the condition which undoubtedly existed before the splenectomy, as it was well known that cases of hemolytic icterus showed low normal values, sometimes even less than 200,000. There was also evidence of lymphatic activity shown by absolute lymphocytosis, and by the enlargement of the external lymphatic glands and the very large tonsils.

Food Requirements of Children after the First Year.—Dr. L. EMMETT HOLT, of New York, exhibited a number of charts showing the results of an attempt to estimate the total caloric needs of healthy children over one year of age. This total was determined by the four factors which made it up, namely: 1, basal requirements; 2, needs for growth; 3, needs for activity; 4, loss by excreta. For basal needs the curve of Benedict and Talbot had been adopted. The per kilo requirement diminished steadily from one year to the completion of growth. Growth needs were calculated from the rate of increase in height and weight for the different years; these would naturally be greatest at periods when growth was most rapid. The loss in excreta at all ages was practically ten per cent. of the calories taken. These three factors, though subject to individual variation with different children, were as averages uniform and irreducible. The only factor which differed greatly with different children was the needs for activity. A child with average activity used up nearly one half his caloric intake in this manner; the very active child much more than this. The total caloric needs for the average child were greatest during the period of most active growth; in boys, fifteen to seventeen years; in girls, thirteen to fifteen years. At this period their needs exceeded those of adults with moderate activity of both sexes. The adolescent boy required four thousand calories daily. The average per kilo needs for boys was one hundred calories at one year; this gradually fell to eighty at six years; it was then practically constant to sixteen years, when it gradually fell to the adult average at nineteen years. In general, a little more fat, a little more protein, and a little less carbohydrate were required by the child than by the adult.

The Effort Syndrome in Children and Young Adults.—Dr. CHARLES GILMORE KERLEY, of New York, stated that during the late international war English army surgeons learned that when certain recruits were put to prolonged hard work at drills, hikes, and other hard exertion, they failed to measure up to the endurance standard required of the soldier in the field. To this condition Dr. Thomas Lewis applied the term effort syndrome. The condition was described by Friedlander and Freyhof as constitutional neurocirculatory asthenia. The boy or girl who might qualify for the effort syndrome class came to the physician with the typical story, which, condensed, meant that there was an absence of capacity for sustained effort, both mental and physical. Wherever endurance was required he failed. In girls these constitutional peculiarities might attract less attention and be more readily excused when present. Among animals, those of defective capacity for economic reasons usually had a short career. The defective functioning human, however, if well born, was urged and forced and stimulated to accomplish what was not in him. Millions of dollars were wasted on youths who were physically and mentally unable to meet the standard set up by ambitious parents and friends in an effort toward their socalled higher education. The highly trained teaching talent of our preparatory schools and universities was wasted in part on poor student material, twenty-five to fifty per cent. of which should be scrapped and put to productive occupation. Before a boy was permitted to avail himself of unusual educational advantages it should be determined that he was worth it. The high school should serve as a clearing house. In addition to mental attainments required for college entrance it should be required that a candidate submit testimonials as to physical fitness and mental capabilities from the head master or high school principal. What was needed was expert occupational diagnosticians who would aid in placing the boys at work for which they were fitted. The boy who belonged to the class under discussion should leave school at the age of fifteen or sixteen years and take up business. In order to make a reasonable success the occupation should be one which was not strenuous. It was unusual to find persons of this type the offspring of strong, vigorous young persons. In the majority of instances they were the offspring of the weakly woman of little resistance and of lessened endurance capacity. A strong, vigorous mother would do much to offset the influence on progeny of a weakly male. The progeny of vigorous males was greatly reduced by inferior mothers. Frequent childbearing had apparently been a factor in some instances. The necessity for a great deal of attention to the physical development of those who would some day be mothers was a very urgent need.

Further Development of Infants' Hospital.—Dr. HENRY I. BOWDITCH, of Boston, said the present day tendency among hospitals was to develop the scientific side and its laboratories so as to bring them closer to the clinics. This valuable information must be properly weighed to be of true service, for we were dealing with the delicate human body and mind and not with test tubes, and common sense and experience played an important rôle.

This idea was being exemplified in the "On Shore" Department of the Boston Floating Hospital, which was being worked out on the basis of a ten bed clinic. This new development had been made possible by the generosity of a few friends, which had permitted the purchase of three small adjoining apartment houses which he had had remodelled. The building and equipment had cost $45,000. Ten was felt to be the best number of patients, as they could be more readily followed clinically, scientifically, and socially. This clinic was held in two wards and the necessary isolation room, under the expert care of three nurses. The wards were so divided that there was less noise and the children were able to have perfect naps, morning and afternoon; symptoms dependent upon restlessness, vomiting, etc., were markedly decreased thereby. The clinic was so manipulated as to give five new patients monthly. The scientific laboratories, chemical and bacteriological, were brought into close proximity, making consultation easy, but carefully separated so that noises, natural odors, etc., did not penetrate. On Tuesday afternoon of each week a health clinic, composed of 150 families, was held under the guidance of an assistant visiting physician. On Wednesday the return "family control" clinic was held, in charge of a visiting physician. Two clinics were held for weighing the children, getting clinical histories and giving treatment.

Since opening on December 15, 1919, thirty cases had been received, twenty-three of which were diagnosed as regulation of feeding and malnutrition in different degrees. It was the plan to admit only nutritional cases, infection being carefully guarded against. The study so far had been to organize methods of attacking the question of the different food elements in growth and lack of growth. Each case was to be examined completely, clinically, chemically, and bacteriologically. The plan was to have patients return at definite periods for chemical and bacteriological tests, physical and mental examination, for ten years. In this way they followed the development of body and mind. A weekly clinic to meet the parents had proved satisfactory, allowing personal touch to impress the parents with the importance of physical care, proper dietetics and discipline. In time groups of parents, developing along natural lines, would be formed. In this way they hoped to understand the mental capacity of the parental group and adapt their ideas to their particular peculiarities; thus comprehending the good points of diet, life, etc., of the different races, they hoped to lead them to a better understanding of child life. It was hoped that this beginning might lead others to establish similar "small enough" institutions for the same study and for the protection of their medical work. They were under the management of the Boston Floating Hospital trustees, who considered it a good ten years' experiment. They would get perhaps sixty patients a year, which at the end of ten years would mean six hundred, and then they would be in a position to talk of their results.

The Misuse of Milk in the Diets of Infants and Young Children.—Dr. B. RAYMOND HOOBLER, of Detroit, stated that the value of milk as a food both for adults and children had been exploited during the past few years to such an extent that its use was being much increased. This had inevitably led to many dietetic errors, particularly in the group of children between the ages of one and six years. These errors might be classified under the headings: 1. Prolonged use of milk as an exclusive article of diet. 2. Increased quantities of milk given along with other foods. Milk might not only be used too long as an exclusive article of diet and in excessive quantities with other foods, but its nutritional value might be injured by boiling. The laity were taught, and rightly so, that milk was an ideal breeding place for germs, and that the growth of these germs might be inhibited by keeping the milk on ice or the milk might be brought to a boil and then covered. Through this teaching the printed instructions accompanying certain patent baby foods, he believed, the use of boiled milk was becoming more prevalent and many injuries to nutrition occurred.

Doctor Hoobler exhibited charts showing the diets usually given between nine and twelve months, between one and two years, and between three and five years, and the relative proportion of the day's calories supplied by milk when one quart was fed, viz., eighty per cent. between nine and twelve months; fifty-eight per cent. between one and two years, and fifty per cent. between three and five years. The relative proportion of different food elements which was fed when one quart of milk was ingested with other foods was also shown, the fat proportion being relatively high and the carbohydrate relatively low. The amount of overfeeding above the basal metabolism which took place when one quart of milk was fed was also shown. Often the child would refuse spoon feeding and take only milk, thus making a bad matter worse, since this habit robbed the child of minerals which should come to it in fresh fruits, vegetables and cereals, not to mention the vitamine and antiscorbutic properties which these foods possessed.

A second chart showed the caloric value and proportion of food elements when one pint of milk daily was fed in addition to other foods, the amount given being the same as in the first chart. This chart showed the total calories reduced to within normal requirements, the proportion of fat and carbohydrate being nearly interchangeable, thus giving the child ample calories to use up in its activities. It also showed lowering of the protein down to the maximum for growth, wear and tear. Children given such a diet were free from vomiting and stupor accompanied by acetonuria so prevalent in children who had been fed a quart of milk daily in addition to a full diet. The propaganda urging the use of a quart of milk daily was fallacious; when followed it led to overfeeding, an unbalanced ration, unhealthy nutrition, and frequent attacks of vomiting accompanied by acetonuria.

Precipitins for Egg Albumin in Stools.—Dr. Clifford G. Grulee stated that the preparation of the stools in this series of cases was the same as that reported in a previous article. Egg white rabbit serum of a titer of 1-40,000 was used. The first series tabulated consisted of 100 stools from twenty-one cases, with three positive reactions; in both instances the children received egg white in the diet. The second series consisted of thirty-three cases in which 242 stools gave five positives. This series was carried out with an antiserum giving precipitants in a dilution of one to 60,000. In this group some of the cases giving positive reactions had had no egg albumin in the diet. It would seem from these results that egg albumin was in nearly every instance completely broken down by the digestive processes in infants and children. This held good, not only for children and older infants, but also where egg albumin was used in small quantities for the newborn as well. There was only one other possibility, and that was that the egg albumin, instead of being broken down in the process of digestion, was absorbed unchanged. The writer did not feel that the specificity of the precipitin reaction for egg albumin was to any degree disproved by the fact that it was found to be positive in stools where no egg had been present in the diet. He was inclined to attribute such reactions to the complexity of the stool.

Rôle of Certain Anaerobes in the Intestinal Flora of Infants.—Dr. Langley Porter, of San Francisco, said that the information they had been able to obtain since their last communication referred entirely to the group of intestinal toxemias in which the abnormal stool bacteria were resistant to dietetic measures usually adequate to produce a change in the flora. In the course of this study very rarely certain specialized forms of colon bacilli had been encountered. These were highly facultative and extremely acid resistant, and so far no effective method had been devised for overcoming their interference when they were present in the stools. On the other hand, investigation of the evacuations of the majority of patients whose stools showed a similar resistance to change in the floral balance revealed the presence of an unusual number of spore bearing organisms, most often anaerobes, usually Welchii, which interfered by virtue of their facultative powers. This facultative function enabled them to utilize any pabulum present. Because of their power in the active stage to utilize carbohydrate they were especially likely to interfere when any attempt was made to shift a proteolytic flora by feeding the patient a high sugar diet. However, by the method suggested in this communication this interference could be overcome and the disappearance of these spore bearing organisms from the stools insured. A diet limited in protein and rich in carbohydrate would effect this change.

Experiments to Determine the Persistence of Extraneous Bacteria in the Gastrointestinal Tract of Guineapigs as Influenced by Diet.—Dr. A. Graeme Mitchell, of Philadelphia, stated that thus far the proof of the implantation of organisms in the intestinal tract rested upon incomplete evidence. Metchnikoff based his claim of the implantation of the Bulgarian bacillus upon experiments carried out by some of his pupils and followers. The work of the later investigators did not substantiate the theory of implantation. The present study was concerned only with the attempt at implantation of an extraneous organism, the Bacillus pyocyaneus, in the digestive tract of the guineapig. The aim had been to study the principles governing the implantation if such could be accomplished. Bacillus pyocyaneus had several advantageous characteristics for a study of this kind. It was potentially pathogenic; it produced poisonous substances in culture which in its pathogenic relationship it assumes in various character; it could be fed in large numbers to the guineapig without causing ill effects; above all it was easy of recognition. With the exception of one experiment in which the guineapigs received the organism by stomach tube, the technic of the experiments was as follows: The guineapigs were offered various diets, and were fed the Bacillus pyocyaneus for three days. At variable lengths of time after this the animals were killed and culture made from the heart blood, the stomach, the duodenum, the ileum, the cecum, and the colon.

The conclusions deduced from these experiments were that when guineapigs were fed on a diet of oats, hay, bread, and greenstuff, Bacillus pyocyaneus when fed disappeared from the gastrointestinal tract within three days. When oatmeal was given as a sole article of diet the Bacillus pyocyaneus had been found at seven and nine days after the last administration. The addition of a small amount of greenstuff, or of a certain amount of butter to the oatmeal diet, had apparently prolonged the period of persistence of the bacterium. Pyocyaneus on these slightly amplified diets had been found to persist about two weeks with considerable regularity. This increased persistence was probably apparent only. The animals on a strict oatmeal diet did not live long enough to enable a complete experiment to be carried beyond eight or ten days. The organism could not be recovered in any case after sixteen days. Judged by the amount of green color produced in the culture the number of surviving organisms became progressively less the longer the interval following the cessation of its ingestion by mouth. It was probable on the basis of these experiments that there was an effect of dietary deficiency which consisted in the depression of a normal mechanism controlling the implantation of extraneous bacteria in the gastrointestinal tract.

The Urgent Need of Dietetic Reform and the Duty of the Medical Profession Toward All the Young of the Nation.—Dr. E. W. Saunders, of St. Louis, drew a picture of the alarming physical degeneracy in the rural and urban population, one third of the youth of the nation being unfit for military service; immigrants from the Ghettos of Europe rapidly degenerating in America, in spite of better wages and more abundant food; negroes of the South physically unfit because of a diet of commercial corn meal, and Italians failing on macaroni made from white flour. He asserted that the first measure to combat the high cost of living was to stop the denaturing of all foods by Federal law. Existing pure food laws were aimed against sophistication only. When these laws were passed, no one knew that deprivation of essential food elements contained in staple foods was more deadly than sophistication or substitution; nor did any one suspect that a diet of maintenance for the adult might fail to sustain growth in the young. Imperfect and diseased teeth, fragile bones, weak muscles, exhausted nervous systems, recurrent infections, visceroptosis, stunted growth, inordinate appetite for sweets and meat, craving for stimulants and for excitement, inability for sustained effort, perhaps imperfect development of the endocrine glands, almost certainly a predisposition to cancer, all this train of evils could be laid to the insane dietary of the American people of the present day. The remedy was twofold, diffusion of knowledge, and legislation.

Medical Supervision of the Boarded Out Child.—Dr. Maynard Ladd, of Boston, described the work of the Boston Dispensary, which was started in cooperation with the Boston Children's Aid Society and the Church Home Society, two of the large child placing agencies, to demonstrate two principles: 1. The value of expert continuous supervision of children in the care of child placing societies. 2. The value of utilizing for the purpose the equipment and medical staff of an organized dispensary, including specialties in all the chief branches of medicine, in surgery, and in clinical and x ray laboratories for modern medical diagnosis and treatment. After describing the organization of the preventive clinic, Dr. Ladd presented a statistical study of 876 individual children. About five hundred a year were cared for. Of these, fifteen per cent. were sufficiently ill from one cause or another to be admitted to the children's hospital wards, which might be taken as a fair estimate of the hospital requirements of such a group of children. A little less than one third of the hospital admissions were for necessary tonsillectomies or adenectomies. The low death rate of 1.1 per cent. undoubtedly was influenced by the prompt detection of serious cases of illness and the facilities provided for early and, if necessary, prolonged hospital care. The mortality statistics were interesting in the proof they offered of the practicability of reducing the death rate of a supervised group of children to a point below that which was accepted as normal for the community. There was a total of seventeen deaths in three years among 1,531 cases, amounting to one death a year for each one hundred children under their care. Equally interesting were the figures showing the effect of the special feeding clinic in the nutritional development of the first and second years. All the babies were fed on modifications of cow's milk prepared in the foster homes and supervised by visiting nurses under medical direction. Seven tenths of these gained in weight considerably above the normal rate of the average healthy infant, and three tenths only failed to reach the normal rate by a small margin.

The conclusion justified from this experience was that with proper organization and intelligent direction the boarded out baby, even though deprived of its mother's milk, was a good medical risk, and need not be deprived of its fair chance in life.

(To be concluded.)

◆

Letters to the Editors.

ANTINARCOTIC LEGISLATION.

New York, *December 29, 1920.*

To the Editors:

A bill has been introduced in Congress—S. 4553, Senator Jones, referred to Committee on Finance; H. R. 14500, Mr. Miller, referred to Committee on Ways and Means—to amend the law governing importation and exportation of opium and cocaine. The persons and organizations backing this bill are undoubtedly actuated by the highest motives, among them being Dr. Wilbur F. Crafts and the International Reform Bureau. The act which the bill seeks to amend is not the Harrison law, but an act passed to carry into effect our international obligations under the opium convention adopted by all the leading nations in 1912.

The bill contains provisions absolutely prohibiting all exports; prohibiting imports of anything but crude opium and coca leaves; limiting total imports of these materials to an amount to be certified by the Surgeon General of the Public Health Service, and forbidding transit through this country of exports from another country to a third country. As the time within which physicians can take effective action with reference to this bill is short, and as the bill, because of the excellence of its purpose, would naturally impress them favorably unless its probable effects are carefully studied, I would like to present to your readers some considerations that I think are worthy of serious attention.

Before discussing its provisions I would like to state the point of view from which I think such questions should be approached. The harm done by the opiates and cocaine is limited to their use by human beings for other than necessary medicinal purposes. The drugs are necessary for medicinal use. From these premises it follows that legislation should be aimed—not against the drugs themselves, which are necessary, and beneficial when not abused—but solely against their abuse. In this connection I would like to call attention to the fact that there is not a complete analogy between liquor legislation and narcotic drug legislation. Measures have been adopted for the prevention of the abuse of liquor which have greatly hampered its medicinal use, and these measures have been tolerated or even approved by many medical men because they do not believe alcohol to have any important place in medical treatment. Few would agree that this applies to the opiate drugs.

I believe that it is possible in the case of the latter to frame legislation which, if strictly and thoroughly enforced, would adequately prevent the abuse of these drugs while involving practically no interference with their proper medical use. But any legislation aimed exclusively at the production or importation of the drugs, rather than at their distribution and use, is bound to result in such interference.

This may not seem to apply to the provision of the Jones bill against exportation, but I think I can point out how it may well have that effect. The international convention wisely made no attempt to provide for prohibition of exports, since many countries do not produce opium, and some do not even manufacture, and therefore many are absolutely dependent on imports for medicinal use. The convention devised a scheme of regulation of exports which all the signatories bound themselves to use their best efforts to put into effect. If the United States should now depart from this agreement by absolutely prohibiting exports it would not only be violating its international obligations but would be creating a grievance on the part of those nations which have been accustomed to depend on this country for a substantial part of their supply of the manufactured products. Such nations might well start a movement in retaliation, and if such movement should be successful and all other nations should take up the gauntlet thus thrown down by us and forbid exports to this country, we would find ourselves absolutely without a supply of opium for medical or any other use, and with nobody but ourselves to blame for it.

I believe the State department can be trusted to give the right advice if it is consulted about this bill, so far as it relates to exports, and physicians interested should try to have it referred to the department and see that it is amended to conform to the department's views.

The provision against this country being used as a relay station for exports from one foreign country to another is not in violation of the spirit of the international convention, and I believe would not be opposed by the State department.

The restriction of imports to the raw materials seems, at first glance, to be in the interest of the manufacturers. I do not know what reasons are urged in its behalf, and am not prepared to say it is improper, but the burden of proof of its necessity should be upon its proponents.

The provision for limiting the amount of total imports upon the certificate of the Surgeon General of the Public Health Service is an example of legislation aimed at the supply. The only excuse offered for such legislation is the assumption that laws controlling distribution cannot be enforced. If they could be, no harm would be done by the importation of ten times the amount required for medical use, as the surplus would lie inert and harmless in the importers' warehouses. As a matter of fact, of course, the law of supply and demand would control, and no more would be imported than could be sold legitimately. But, assuming that the laws controlling distribution cannot be enforced, what would be the effect of limiting the total national supply to the exact amount needed for medical use?

The law of supply and demand would then apply to both kinds of use, legitimate and illicit. A competition would arise, and the demand for illicit use would inevitably result in some of the supply being diverted to the street trade. This would cause an actual shortage in the legitimate supply, as well as an increase in the price. Incidentally, it would stimulate smuggling, which is even harder to control than domestic distribution.

In the case of liquor legislation we have already seen these effects, as liquor is much more difficult to obtain and more expensive under prohibition, even when required for medical use, than before; it is also being smuggled into the country in large quantities. Most of us would be loth to see this happen with the opiate drugs, although one prominent health official who is heartily supporting the Jones bill tells me he does not think opiates are necessary, and would view such a result with complacence.

I am informed that the money heretofore spent for the enforcement of the Harrison law, which controls distribution, has not been equal to the amount received under its provisions, but that the Internal Revenue Bureau proposes henceforth to spend much more money for enforcement. There seems to be a prevalent tendency in this country, when any law does not accomplish all that is expected of it, to blame the law and clamor for the passage of new laws. In nine cases out of ten the fault lies in the inadequate enforcement of existing law, and can be corrected very simply by stricter enforcement. New laws do not enforce themselves any more than old laws, but they often require a new machinery which diverts money that might be more effectively used by adding it to the fund for enforcement of present laws.

A new law, unless very carefully framed, is apt to be like a blunderbuss loaded with buckshot in the hands of a police officer. It may kill the criminal at whom it is aimed, but innocent bystanders are likely to suffer. If the criminal cannot be reached in any other way, well and good; but let us first see if we cannot develop better marksmanship with our Harrison law rifle before we feel compelled to adopt the Jones bill blunderbuss.

ARTHUR D. GREENFIELD,
Attorney and Counselor at Law.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

Vol. CXIII, No. 3. NEW YORK, SATURDAY, JANUARY 15, 1921. Whole No. 2198.

Original Communications

THE PROMOTION OF SURGICAL EFFICIENCY IN HOSPITALS.*

By John B. Roberts, M. D.,

Philadelphia,

University of Pennsylvania, Graduate School of Medicine.

Workmen's compensation acts have increased the evident responsibility of those hospitals which admit for care and treatment persons injured by industrial accident. The moral responsibility existed before compensation laws were enacted. Nevertheless, officers of institutions doubtless feel the pressure of that responsibility more keenly now that business plants are compelled by law to pay for care of workers injured during hours of employment.

There is little doubt in my mind that the amended compensation law of Pennsylvania, for example, has had a similar effect in increasing surgeons' attention to details, and intensity of supervision of treatment, when industrial patients come under their personal care or enter hospital service. It is much easier to forget to visit or to postpone visiting a wounded man, who is not expected to pay a fee, than one whose bill for professional treatment is guaranteed by state law and the treasury of a mining company or a successful manufacturer.

One indirect benefit to the community, therefore, will be an improvement in surgical efficiency in dispensary and ward work of hospitals and advancement in the scientific equipment of individual medical men. This gain will be found worth while to the taxpayer, the lawmaker, and the whole medical profession.

An immediate result of industrial pecuniary responsibility to the hospital and to the doctor has been a marked improvement in keeping records of patients. This is shown in steps being taken to have histories of previous injuries and illnesses and the details of treatment and results of the present wounds duly recorded. For years, many hospitals gave so little attention to this matter that information was often not obtainable even in serious cases, subjected to months of treatment, with a reasonable prospect of judicial inquiry into the facts of an accident. I need not say that many, perhaps most, surgeons today have no adequate record system of their private surgical work, so far as description of injury, the outline of treatment, or the condition of the patient at the end of treatment.

The custom in vogue in a large number of metropolitan hospitals exacts unpaid professional work from its surgical staff. This enjoyment of cheap service is destined to be lost by the demand for greater efficiency than is to be obtained by its continuance. No argument of value justifies the creed that surgeons should give their services to hospitals for their pay patients. The habit of expecting this sacrifice of time, thought and skilled labor without remuneration is a traditional one founded upon the old notion that a hospital was a refuge for injured men who had fallen among thieves and been stripped of their purse and clothing. This idea is formally shown in the official seal of a hospital in Philadelphia.

Passage of time has changed greatly this status of hospitals. Now many persons are permitted to enter the walls of such institutions for free treatment, upon whom the donations of the charitable public are unnecessarily expended. Baltimore became a world centre of the highest type of surgical and medical service when the trustees of Johns Hopkins University brought to its hospital staff men of great intellectual and professional promise by paying good annual salaries.

Why should hospital authorities be satisfied with the fag end of a distinguished surgeon's or physician's day? All of us doctors who have lived in close association with hospital administrative affairs know of inadequate service rendered by surgeons and physicians, whose private practice necessarily demands their more instant and attentive professional skill. Men of talent and high repute are to be found who will accept unpaid appointments on hospital staffs and then thrust the real work of their posts year after year on junior assistants. Of what value are such officeholders to hospital efficiency? Better would it be to give short shrift to an unpaid surgeon and appoint a wide-awake incumbent at a reasonable salary.

The abandonment of the fractional term of ward service, so common in the United States, will promote efficiency in the conduct of hospitals used for industrial surgery. By fractional service, I mean that the attending surgeons, and physicians also, serve for only two, four or six months in each year; and at the end of these periods patients are transferred to another surgical chief. Under such schedules a serious injury may oblige a patient to have three or four different surgeons before he is discharged, improved or cured.

---

*Read before the Section on Industrial Medicine and Public Health of the College of Physicians of Philadelphia, December 17, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

The short or fractional term of surgical attendance should be discontinued. A continuous service from year to year under one chief, with junior surgeons trained to continue the records, discipline, methods, and scientific efficiency of the particular section of the hospital, will give the most satisfactory institution for treating injured industrial employees. No manufacturing plant is likely to reach the status needed to attain a wide reputation for successful operation and a proved output, if it shifts its department foreman three or four times a year. The continuous term of surgical service need not prevent the employment with salary of a number of chief surgeons. Each one of them, however, should have his own section or ward, manned by subordinates, who should remain long enough to develop into surgeons of discrimination and good judgment. The senior of these understudies should be given good reason to believe that, if proved deserving, he is likely to become a chief surgeon.

The nursing force should be organized in much the same way as the surgical personnel of a ward or section. Frequent changes of nurses in operating room, superintendent's office, or ward service, lead to confusion and bring failure to obtain proper standards of nursing efficiency. The necessity to train novitiates in nursing greatly impairs the progressive development of a hospital, unless care is taken to prevent an undue number of partly trained pupils being put into ward service at one time. Cheap nursing is almost as bad as cheap surgical supervision.

Hospitals desirous of obtaining income from large numbers of compensation patients or private pay patients will find it a good policy to pay the surgical staff and the nursing staff such stipends as will secure an intelligent, well trained, conscientious and up to date personnel. It is probable that it is the short, fractional terms of duty which tempt some surgeons to accept high positions in several hospitals. Careless attention to duty is pretty certain to be developed by this attempt to divide one's devotion between three or four institutions. The hospitals receive half hearted service, the patients are too often shifted to a new chief, and the surgeon himself constantly comes against obstacles which cannot be overcome in a few weeks. The result is slovenly work and a divided loyalty.

I published some years ago a protest against the administration of anesthetics by inexperienced hospital assistants. This peril to patients has been considerably lessened in recent years, though it is still a responsibility for further administrative consideration.

A source of inefficient care for the safety of persons brought to the ward for emergencies is the assignment to that duty of inexperienced doctors and nurses. Surgical alertness, trained judgment, and wise treatment are not to be expected from young physicians just graduated from the medical college or in young women still in classes for training nurses.

An accident ward needs the best trained members of the resident medical staff within immediate call, day or night. It needs at least one experienced graduate nurse, who is capable of quick action in medical and surgical emergencies; it needs supplies at hand to deal immediately with shock, hemorrhage, poisoning, and impending death. There should also be sufficient muscular aid within call, to be immediately available for ejection of midnight intruders or drunken busybodies.

Improvement in laboratory investigations of disease will probably be needed in some hospitals to make them satisfactory to the business men who are required by law to pay the bills of workmen suffering injury in industrial plants. The advantage of having social service departments instituted in all hospitals will soon be recognized by many more institutions than is the case at the present time. Persons injured through war casualties have been shown to need muscle training, psychological influences, and physiotherapeutic agencies, if complete or nearly complete return to usefulness is to be secured. Apparatus of varied construction will be of much value in this direction, in industrial surgery, especially when used in association with social service or the socalled welfare departments of the reconstruction movement. Mental occupation, vocational training, and community treatment stimulate automatic reactions; and hopeful energy is of great assistance in many forms of ill health after sudden accidental disability.

My final topic in this discussion of defects in medical organization of hospitals is merely a corollary of already mentioned sources of trouble. When the medical chiefs are negligent or inefficient, the executive department is pretty sure to show evidences of want of grasp of the essential duties of a hospital. Trustees, however, soon defer to the medical staff in medical matters, if the members of the staff show energy, loyalty, and progressive, businesslike qualifications.

It is when the doctors neglect their professional obligations, permit slack service in their personal assistants, and condone inefficient work in dispensaries, wards and laboratories, that the nursing units assume or are obliged to accept authority belonging properly to the interns, resident physicians, and chiefs. The heads of nurses' training schools, the nurses in charge of the wards, and even the pupil nurses, not only live in the hospital but have a continuous service extending over several years. The unpaid attending surgeons and physicians with fractional terms of duty are at best only occasionally within the hospital walls. The resident physicians and interns, who unfortunately have no prolonged connection with the hospital, reflect the character and manners of their chiefs. It is not unlikely, therefore, that the tone of the wards will gradually reflect the personality of the nursing overseers. Hence is it that in many institutions for the sick and hurt there is too much assumption of medical authority by nurses. This is often seen markedly in the conduct of nurses in private practice after graduation

To obtain a perfect hospital, cheap medical labo must be given up, fractional terms of service converted into continuous responsibility, medical demeanor and earnestness instilled into the minds o the surgeons and physicians, and interns and th nurses taught that their function is to obey order and to maintain discipline in the wards. Poor service often arises from neglectful and careless demeanor of medical officials in hospitals. The medical staff, therefore, is usually the underlying cause of inefficient care of the sick, insubordination in executive departments, and defects in nursing.

313 South Seventeenth Street.

ACTIVE IMMUNIZATION BY MEANS OF NONVIRULENT AND NONTOXIC LIVING TUBERCLE BACILLI.*

By Charles D. Aaron, M. D.,
Detroit, Mich.

Professor Metchnikoff said that there are some deadly and virulent strains of tubercle bacilli and others comparatively inoffensive. If one has the good fortune to be attacked in youth with an inoffensive strain, he acquires the same kind of immunity against the virulent strains of tubercle bacilli as vaccination gives one against smallpox.

By active immunization is understood, according to Ehrlich, a change in the body of the patient caused by the introduction of bacteria or their metabolic products, resulting in the formation of protective substances (antibodies) in the blood serum of the patient. The patient is thus made to evolve the beneficial protective substances himself, in his own body. In the case of tuberculosis, active immunization is intended as a protection against infection, and the antibodies should possess such activity as to be capable of eliminating infection already present. It was Koch's fundamental idea to employ as far as possible living tubercle bacilli as the active agent, and numerous authors have made experiments, extending over years, to combat tuberculosis in this way.

When germs of infection enter the body the latter strives to overcome them, partly by dispatching its blood cells to combat the intruders, and partly by forming a variety of substances which serve as a defense against the particular virus concerned. These substances possess the power of destroying the disease germs or preventing their multiplication, and of rendering bacterial poisons (toxins) harmless by the formation of specific antitoxins that combine with them. As a final result of this struggle of the animal organism during an infectious illness, the organism enjoys for a time afterwards a condition of complete protection or immunity, or at least an increased resistance to the particular infection concerned. The best examples of this are furnished by the lasting immunity which the body attains as the result of surviving an attack of smallpox, or children's diseases such as scarlet fever or measles.

After the results of Jenner's method of inoculation against smallpox had shown that the natural process could be successfully imitated artificially, numerous attempts were made to extend the method of preventive inoculation to other infectious diseases. Such attempts were subject to narrow limitations, owing to the incalculable dangers accompanying artificial inoculation; for although one might be reconciled to the loss of animals in consequence of inoculation, in attempts to protect them from devastating diseases, it is of course out of the question to apply an artificial infection to human beings unless it is quite innocuous.

Numerous experiments made on animals by investigators in all civilized nations led finally to the conclusion that the animal body possesses the power of forming specific protective and reactive substances in response to the introduction of foreign substances of the most diverse kinds when these are artificially administered by subcutaneous injection. The organism thus produces antibodies not only against living bacteria which may have penetrated into it, but also, for example, against any kind of foreign cells containing protein substances; it therefore produces antibodies against dead bacterial matter. After this last fact had been established and after experiments on animals had conclusively proved that, at least for many diseases, immunity could be attained by fairly prolonged treatment with dead disease germs, medicine was furnished with a method of treatment divested of danger and therefore widely applicable to human beings.

This method has attained great importance, especially in combating typhoid fever and cholera, and during the late war it found an enormous field of application and successfully restricted the spread of these war plagues.

These inoculations (with dead bacteria), however, do not afford complete security against infection, though they render the illness a mild one and shorten its duration. It is by no means a matter of indifference whether, on the one hand, the animal body has to fight out the battle with infecting parasites which have entered it in a vigorous state under conditions favorable to themselves, and which, owing to their reproductive capacity, can only be overcome after prolonged efforts of the body attacked, or whether, on the other hand, dead bacteria are injected which it is a relatively simple matter for the body to render harmless. Moreover, the dead bacterial inoculum, whether it has been killed by heat, as is usually the case, or by chemical agents, has invariably undergone a considerable modification of its intimate structure.

For these reasons immunization by means of dead bacteria is always imperfect, and in many cases complete immunity can only be attained by the subsequent administration of living bacteria, because they alone can provoke the development of all the different kinds of antibodies. The use of living disease germs, therefore, remains as the most rational method of treatment, and many attempts have been made to eliminate the dangers naturally associated with this method of treatment.

Much has already been attained in this direction by avoiding the natural mode of infection and effecting the inoculation, for example, not by way of the mucous membrane, but by cutaneous, subcutaneous or intramuscular injection, so that the disease germs encounter unfavorable conditions and give rise to only a mild illness. Even at the present time inoculations with material of unattenuated virulence are made on animals against many animal scourges, such as the Texas fever of cattle, swine fever, cattle plague, and other diseases. The same statement applies to the variolation originally employed on human beings in combating smallpox. Cholera cultures of full virulence were formerly used for inoculation, not only on animals but even on man. For example, Ferran, Haffkine, and also Powel and Brown gave subcutaneous injections of cholera bacilli and observed only slight symptoms of illness as a consequence. But even though there may be no danger to the persons inoculated with such cultures, it is necessary to take into account the possibility of spreading the disease by using these highly infectious inocula. The aim must therefore be to make use of attenuated disease germs which still retain the capacity to produce immunity.

---

*Read before the Detroit Academy of Medicine, October, 26, 1920.

Experience proves that even slight illnesses may be followed by an immunity as complete as that which follows the most severe forms of the same infection. The best known example of the possibility of successful immunization by means of a living attenuated virus is the familiar vaccination against smallpox. If other pathogenic bacteria could be attenuated with the same certainty and uniformity as smallpox vaccine, the problem would be solved.

Attempts in this direction, however, have encountered the greatest obstacles, although the most diverse methods of attenuation have been tried: e. g., by warming, by cultivation at temperatures other than the optimum, by drying, by chemical agents, by continued cultivation on artificial nutrient media, and by passing the bacteria through animals not very sensitive to that particular species. The last mentioned method of attenuation is based on the transformation of the highly virulent virus of human smallpox, or variola, into the mild cowpox vaccine that is now used for prophylactic inoculation. In addition to this outstanding example of the attenuation of a living disease virus, it is only possible here to mention the attenuation of the bacilli of hog cholera by Pasteur and the successful attenuation of the virus of rabies by passage through monkeys, which is also due to the same investigator.

Attempts have recently been made also to employ typhoid bacilli in the living state for immunizing human beings. In this connection the vaccines of Ichikava and Besredka deserve mention as having attained importance within recent years. The typhoid bacilli in these vaccines are partially deprived of their toxic characters by treatment with typhoid antiserum; in Ichikava's vaccine this is effected by treatment with the serum of human convalescents, in Besredka's by treatment with the serum of immunized animals. In view of this difference it is clear that Ichikava's vaccine can find only a very limited use.

As might have been expected, the greatest efforts have been made to obtain a suitable vaccine possessing preventive and curative action in regard to the most devastating of all diseases, tuberculosis. R. Koch proposed, as an object to be aimed at, active immunization against tuberculosis by means of living tubercle bacilli. A vaccine of this kind must of course be capable of being introduced into the human body without danger; and numerous investigators have for many years sought to obtain tubercle bacilli of sufficiently reduced virulence. Apart from attenuation by chemical agents, numerous experiments have been undertaken to effect the necessary attenuation by passing the bacteria through the bodies of animals, and to employ, instead of human tubercle bacilli, some strain to which the subjects to be immunized are only slightly sensitive.

Attempts were made to attenuate the human bacillus by passing it through fowls; to render dogs insensitive to the human tubercle bacillus by treating them with the tubercle bacilli of birds; to immunize rabbits with the tubercle bacilli of birds; to treat cattle with tubercle bacilli from human beings or from horses, and so on.

Of practical importance in this connection are the bovovaccination introduced by Von Behring, and a vaccine prepared by Koch and Schütz for the treatment of bovine tuberculosis. In both cases cattle are immunized by means of human tubercle bacilli. The converse of this method, that is, the treatment of man by means of bovine bacilli, has not yet proved successful.

While formerly experiments were restricted to tubercle bacilli obtained from warmblooded animals, within the last few decades the tubercle bacilli of coldblooded animals have been included in the scope of investigation. Among the latter may be mentioned the bacilli of fishes, slow worms, frogs, and salamanders. Besides these, various acid fast saprophytes were tested. A. Nöller, in particular, carried out experiments on immunization with these various kinds of bacilli, and obtained encouraging results with the tubercle bacilli of the slow worm. No vaccines of great practical importance were obtained, however, until among the tubercle bacilli of coldblooded animals those of the turtle became the centre of interest. These differ in certain respects from the tubercle bacilli of other coldblooded animals, and occupy a position intermediate between the latter and human tubercle bacilli, on which account they are specially suited for use in the therapy of tuberculosis.

Of the utmost importance is their ability to develop vigorously at 98.6° F., wherein they differ from the tubercle bacilli of other coldblooded animals. It is noteworthy also that when cultivated at the ordinary incubator temperature they exhibit the same cultural features as human tubercle bacilli, covering the nutrient medium with a dry granular film, while at 68° F. they form a moist creamy culture field.

The original strain of the tubercle bacillus of the turtle which is employed therapeutically at the present time was isolated in 1901 by Dr. Piorkowski from two turtles which had succumbed to tuberculosis. After fifteen years of cultivation on artificial nutrient media and repeated passages through turtles, a strain of tubercle bacillus was obtained by Dr. Piorkowski which even in large doses is without effect on guineapigs, the most sensitive of all animals to tuberculosis, and which, therefore, as might have been expected, is nonvirulent and nontoxic to man. Since experiments on animals showed also that this turtle tubercle bacillus produced a noteworthy immunizing effect, it is now possible to prepare the long desired vaccine from living tubercle bacilli which can be applied to human beings without danger of infection.

From the theoretical point of view, Piorkowski explains the mode of action of the turtle tubercle bacilli in accordance with Ehrlich's side chain theory, which is as follows: In consequence of a deficiency of receptors, the cell is stimulated to an overproduction of these bodies. The newly formed receptors which are unable to find a place in the cell, pass into the blood serum before they have attached bacterial substances to themselves. By these extruded receptors, the toxic bacterial products are caught and fixed and thus rendered inactive before they come into proximity to the sensitive cells. In an organism suffering from tuberculosis, the harmless antigens of the turtle tubercle bacilli combine with the receptors and are turned loose into the blood as antibodies. In consequence, further supplies of new receptors are constantly produced, and these combine with and render innocuous not only the turtle tubercle bacilli, which act as harmless antigens, but also the human tubercle bacilli present in the diseased organism. The longer and more copiously the formation of antitoxins proceeds in this way, the more complete is the destruction of tubercle bacilli and the more certain and lasting is the cure.

Since the bacilli cultivated at different temperatures exhibit different characters—e. g., those cultivated at 98.6° F. resemble more closely the virulent tubercle bacilli and produce more lasting effects in the human body than those cultivated at 68° F.—it has been found most suitable to employ a mixture of the two kinds. By mixing the two kinds in the right proportions a vaccine of the required activity can be prepared which has been shown to be quite nonvirulent.

Dr. Piorkowski's turtle tubercle bacillus vaccine is harmless, even in large doses, has a wide range of usefulness, and is simple in application in the treatment of tuberculous patients.

The diagnosis of tuberculosis has made rapid progress and attained more definite results than the specific therapy. This has been mainly due to refinements in the technic of the röntgen ray, by which it is now possible not only to recognize the early stages of pulmonary tuberculosis, but also to control the treatment efficiently. On the basis of practical results, it is now possible to afford protection to those who are threatened with tuberculosis and to cure many who are already suffering from it.

To be sure, it is not claimed that the vaccine restores organs which have undergone irreparable pathological changes, but is only applicable in the early stages of the disease. Therefore an early diagnosis is advisable.

Just as in vaccination against smallpox, it is assumed that complete immunization against tuberculosis is established by a single injection of Piorkowski's vaccine. The injection is made with a sterile syringe at the outer edge of the gluteus maximus muscle, after sterilization of the site with tincture of iodine.

812 Kresge Building.

A RATIONAL INTERPRETATION OF BLOOD PRESSURE FINDINGS.*

By Francis Ashley Faught, M. D.,
Philadelphia.

The rational interpretation of clinical evidence is the only sure foundation upon which a permanent superstructure of successful practice may be built. Without it there can be no accurate and dependable basis for the management of even the simplest case. Our forefathers in medicine were forced, for lack of mechanical and chemical aids to the study of disease, to develop the art of differential diagnosis to a high degree; but times change, even in medicine, so that today in every branch of practice the physician is surrounded and fortified by many highly specialized diagnostic instruments and clinical laboratory methods which, when intelligently employed, may develop new facts and additional evidence which may prove to be of great value in guiding his clinical judgment and in clarifying the diagnosis.

The development of the scientific side of medicine is, however, not an unmixed blessing, because it carries with it an added responsibility, and demands of the present day physician, no matter what his particular specialty or field of endeavor, persistent reading and study in the realms of chemistry, physics and the allied sciences in an effort to keep in view the ever receding horizon of modern medicine and surgery.

Furthermore, the adaptation of instruments of precision to the uses of the clinician has had a strong tendency to develop a certain carelessness and superficiality in diagnosis, mainly through an ever present tendency to depend too largely upon the newer mechanical and chemical diagnostic aids, to the partial or complete exclusion of plain oldfashioned physical diagnosis. This tendency is particularly strong in the field of cardiovascular and renal diagnosis, wherein the systolic blood pressure is so frequently mentioned as the most important if not the sole factor of value to be derived from sphygmomanometry. Such an attitude if maintained can lead only to disaster, through faulty diagnosis, unreliable prognosis and irrational modes of treatment.

Physical diagnosis, as applied to cardiovascular and renal disease, should have for its object the careful study of many widely diversified but clinically related phenomena, in order to develop a clear clinical picture of the pathology, to the end that corrective measures may be directed toward, 1, abnormalities in cardiac rhythm, which may be due to, a, disturbances in the intrinsic nervous mechanism or in muscular continuity and integrity, or, b, extrinsic motor and vasomotor disturbances including the bulbar centres; 2, variations, either temporary or permanent, in the calibre of the arterial pathways; 3, alterations in venous pressure, either local or general; 4, alterations in blood composition as shown by change in the alkali reserve, the presence of circulating toxins, of abnormal products of protein metabolism, or changes in corpuscular content and the viscosity.

---

*Read by invitation before the American Electrotherapeutic Association, Atlantic City, N. J., September 17, 1920.

This paper does not permit of any extended consideration of these separate factors at this time. Suffice it to say, in passing, that they can only be determined by careful and painstaking study, giving due consideration to all correlated data while avoiding the pitfalls of attaching undue significance to any particular symptom or piece of clinical evidence.

This brings us up to a consideration of the subject assigned to me, in which I hope to demonstrate the uselessness of the sphygmomanometer as usually employed, when based upon the common fallacy that the study of blood pressure consists in reading the systolic pressure alone. Recently the clinical importance of the systolic pressure as a factor of definite significance of itself has lost much in prestige, until now, one should be very careful in assigning too important a rôle to this factor in disease.

Persons suffering from widely different conditions involving the dynamics of the circulation, conditions demanding widely varying modes of treatment, may be found to have the same average maximal (systolic) pressure.

The minimal (diastolic) pressure, on the other hand, reacts more significantly to pathological influences and less to the socalled physiological factors, which constantly modify the circulation so that, when considered in relation to the duration of the cardiac cycle (pulse rate), this may often be found to be a far better index of the condition of peripheral circulation, and through it of the cardiac load and overload, than is the systolic pressure.

In order to amplify these statements I have tabulated a few significant readings, arranged in three groups: Normal systolic pressure, high systolic pressure, and low systolic pressure.

SERIES I.—AVERAGE SYSTOLIC PRESSURE.

A.—Systolic 140, diastolic 90; pulse pressure 50, pulse rate 72. Normal ratio between component elements; pulse pressure normal; peripheral resistance normal; pulse rate normal; cardiac load normal; heart functioning normally.

B.—Systolic 140, diastolic 100; pulse pressure 40, pulse rate 96. Abnormal relation of component elements; small pulse pressure; peripheral resistance high, directed toward holding organ tension and maintaining secretory efficiency through a sustained systolic pressure; accelerated pulse rate of reflex origin for the same purpose; cardiac load high; cardiac response low, due to poor myocardium. Extra demand for effort not forthcoming. A dangerous condition leading to cardiac dilatation if the strain is not relieved.

C.—Systolic 140, diastolic 75; pulse pressure 65, pulse rate 64. Abnormal relations, large pulse pressure; peripheral resistance low; systolic pressure maintained by an overacting heart, low diastolic; evidence of effort to compensate for excessive cardiac effort by opening up peripheral pathways, slow pulse of vagus origin for some compensatory purpose; cardiac load high, response good, due to efficient myocardium. Extra demand for work promptly and efficiently responded to, a condition frequently met shortly after exercise in a normal cardiovascular system.

D.—Systolic 140, diastolic 30; pulse pressure 110, pulse rate 64. Abnormal relations; extremely large pulse pressure; peripheral resistance apparently very low; systolic pressure maintained by immense cardiac power; diastolic pressure very low, at times zero; evidence of effort to compensate for loss of peripheral resistance, here due to aortic insufficiency, in which the arterial pressure fall (diastolic) is the combined result of overlarge capillaries and return of blood to the heart during diastole.

It will be seen from the foregoing examples that the systolic pressure alone may be of no clinical significance, but that the diastolic pressure and the pulse rate were largely significant in placing the case in its proper place, while the indications for method of handling these different types is obvious.

Another series with high systolic pressure is extremely instructive:

SERIES II.—HIGH SYSTOLIC PRESSURE.

A.—Systolic 210, diastolic 140; pulse pressure 70, pulse rate 80. Normal relations of components in spite of high systolic pressure. Pulse pressure in normal ratio, despite marked elevation of diastolic pressure; pulse rate normal. These findings are met in cases of general arteriosclerosis at the time when the individual may be symptom free and in whom no effort should ordinarily be made to modify pressure by measures other than hygienic.

B.—Systolic 210, diastolic 160; pulse pressure 50, pulse rate 110. Abnormal relations of components; high systolic pressure; overelevated diastolic pressure, producing diminished pulse pressure; elevated pulse rate. This would follow example A as a result of maintaining conditions of normal equilibrium against a high general arterial (peripheral) resistance over a long period of time or from some sudden demand for additional effort, or injudicious medicinal therapy. Myocardium failing, general physical signs developing.

C.—Systolic 210, diastolic 115; pulse pressure 95, pulse rate 70. Third stage of example A. Myocardium still efficient; equilibrium distributed due to intercurrent toxemia of kidney origin; heart has responded to toxic stimulation; diastolic pressure has fallen as a compensatory process to promote elimination.

D.—Systolic 190, diastolic 130; pulse pressure 60, pulse rate 80. Fourth stage of example A. Myocardium has temporarily recovered but without regaining its former power; evidence of myocardial weakness persists (secondary hypotension), due to prolonged cardiac overstrain from causes acting to produce high systolic; heart less efficient than at A, but still capable of acting under proper environment for some time at this pressure.

SERIES III.—LOW SYSTOLIC PRESSURE.

A.—Systolic 100, diastolic 65; pulse pressure 35, pulse rate 80. Circulatory equilibrium normal; peripheral resistance in normal relation; pulse pressure normal; cardiac load normal, but heart acting at a low level characteristic of the neurasthenic or congenital asthenic type.

B.—Systolic 110, diastolic 70; pulse pressure 40, pulse rate 98. Circulatory equilibrium normal; peripheral resistance in normal ration. Pulse pressure and systolic pressure both proportionately increased; cardiac load normal; shows results to be expected in the successful management of type A; cardiac efficiency increased but not up to standard.

C.—Systolic 100, diastolic 80; pulse pressure 20, pulse rate 100. Circulatory equilibrium abnormal; systolic and diastolic pressure ratio below normal; pulse pressure small; pulse rate elevated; general effect of toxemia, usually met in the tuberculous, often met in convalescence from acute infections.

D.—Systolic 90, diastolic 40; pulse pressure 50. Circulatory equilibrium disturbed; systolic pressure low and pulse pressure greatly increased. Type met shortly after arrest of massive hemorrhage; altered components here due to combined factors of loss of fluid and secondary dilution of blood due to rapid replacement of plasma from tissue spaces, resulting in relative reduction in corpuscular elements and incidental reduced viscosity.

The thoughts that I wish to leave with you are these:

1. The systolic pressure alone should not be depended upon unless supported by the diastolic pressure, the pulse pressure and the pulse rate.
2. The diastolic pressure is a far better and a much more accurate indication of circulatory change than the systolic pressure.
3. The cardiac rate together with the diastolic pressure may convey more information than the latter alone.
4. The complete blood pressure record is essential to diagnosis, prognosis, and as a guide to the nature of treatment and a demonstration of the effect.
5. The pulse pressure is of great value in determining the condition of the circulation and in directing the trend of treatment.
6. The pulse pressure has often a profound significance and may of itself clearly point to the diagnosis.

5000 SPRUCE STREET.

THE SLOW INTRAVENOUS ADMINISTRATION OF LARGE DOSES OF SODIUM CITRATE.

A New Method for the Control of Bleeding.[*]

By HAROLD NEUHOF, M. D.,
New York,
AND SAMUEL HIRSHFELD, M. D.,
New York,

(From the Department of Surgical Research, College of Physicians and Surgeons, Columbia University, and the Surgical Service of Dr. Howard Lilienthal, Mount Sinai Hospital.)

When the citrate method of blood transfusion was introduced in 1915, the question that at once arose was whether the intravenous introduction of sodium ctirate, recognized as an anticoagulant, would not result in a suspension of coagulation in the recipient's blood. It was soon established conclusively, however, that this did not occur; in fact, a transient shortening of the coagulation time in the recipient, with a subsequent return to the previous level, was found to follow the transfusion of citrated blood. In an effort to seek an explanation for this paradoxical action some experiments were begun by Neuhof in 1916, and taken up again last year.

The experiments will be reported in some detail at a later date. In brief, they establish the following hitherto undescribed results of sodium citrate injections: 1. The coagulation time is tremendously shortened within a few minutes of the introduction of nontoxic doses of sodium citrate, and this shortened coagulation time is sustained for one or more days. 2. The bleeding time is likewise shortened so that, after citrate injection, large vessels can be divided with prompt cessation of hemorrhage. 3. Coincident with the shortened coagulation time the venous blood is altered in color to a light arterial tint. In addition, the experiments demonstrated that there is no fixed toxic or lethal dose of sodium citrate per kilogram of body weight, but that toxicity depends to a remarkable degree upon the rate of introduction of the citrate solution.

Few and incomplete observations have been reported on the effect of sodium citrate administered intravenously in the human being. Weil (1) reported the administration of sodium citrate in one patient, an adult. Five grams of a twenty per cent. solution were injected. The coagulation time was halved; no other data were given. In a case of hemophilia, described by Ottenberg (2), a minute dose (0.6 gram) was followed by a marked drop in coagulation time. Forty-eight hours later a prolongation of coagulation time was found. Kinsella and Brown (3) recently reported an attempt to control the hemorrhagic manifestations in the lungs in influenza by intravenous introduction of sodium citrate in one gram doses and reported marked effects on coagulation time in five patients. Finally we learned very recently, through the courtesy of Dr. Lewisohn, that Weil attempted to control bleeding in three patients by the intravenous administration of one gram doses of sodium citrate; the results were not published. From none of these reports can one gain any idea of the duration of the changed coagulation time following citrate injections except possibly in Ottenberg's case. In all, with the single exception of Weil's case, very small doses were employed. We have been unable to find any reports in the literature of any study of the possible effects of large doses of sodium citrate on bleeding.

Our clinical observations were begun a year ago and are being continued at the present time. About a hundred injections of large doses of sodium citrate have been given by us, and this report is based upon the observations made in these cases. The tests used for determining coagulation time will be described elsewhere, and also the evolution of the optimum dose of the drug. We now employ a dose of from six to eight grams for adults and one to three grams for children, and believe that in the former the six gram dose will prove to be the most satisfactory.

Preparation and concentration of the sodium citrate solution.—The solution is prepared by of solving U. S. P. sodium citrate in distill Examfiltering if necessary. The solution is that did not an autoclave. It should not be us of osteoplastic fectly clear. We now employ acute osteomyelitis solution. The optimum dosing on at the end of twenty c. c. of this solution has not been a single

---

[*] Read at the stated meeting of the Surgical Section of the New York Academy of Medicine, December 2, 1920.

Administration.—The solution is usually introduced into a vein at the bend of the elbow through a Fordyce needle with a twenty c. c. syringe. At least ten minutes should be consumed for the injection of the drug. Otherwise it seems to us that serious manifestations may possibly follow, for they were observed in the experiments when citrate solutions were rapidly introduced. Our custom is to inject about two to three c. c., wait a few moments to see if any discomfort is complained of, inject another two to three c. c., and continue in this manner until all the solution is introduced. In the few instances in which we were in doubt as to the advisability of continuing the introduction of the citrate, we preferred stopping at a smaller dose than the one planned. If any of the manifestations to be described appear, we always await their disappearance before the injection.

Since this paper was completed a death following a citrate injection has occurred in another's hands. The solution was not introduced according to our technic. Under the impression that we may possibly not have laid sufficient emphasis upon the slow and intermittent introduction of the solution as ascribed above, the case is reported in detail. The notes have been obtained through the courtesy of Dr. A. A. Berg and Dr. E. Libman.

Case.—A woman, sixty-nine years old, was operated upon for common duct stone. Three days after operation there was oozing from the wound, after packings had been removed. As a prophylactic measure against further bleeding a sodium citrate injection was given. Sixteen c. c. of a thirty per cent. solution (4.8 grams) were introduced without pause within a five minute period. Directly thereafter respirations ceased, and the heart stopped beating several minutes later. At the postmortem examination by Dr. E. Libman there was no free blood found in the peritoneal cavity, and no evidence of thrombosis or embolism. There were adhesions from an old pericarditis, marked sclerosis of the thoracic aorta, and a small carcinoma of the stomach.

It is in a sense fortunate that the first death following a sodium citrate injection should have occurred in a case in which there was a fatal prognosis from the gastric carcinoma, and it is significant that a dose of the drug less than the maximal dose accepted by others should have been followed by death. But the object lesson is clear. We are now no longer in the position of theorizing as to the absolute necessity for the slow and intermittent intravenous administration of sodium citrate, the conclusion derived from our animal experiments. The concrete case establishes the fact once and for all that sodium citrate is a very dangerous drug when injected intravenously without observing the precautions we have taken and advised.

[illegible]anifestations after injection of large doses of car[illegible] *citrate.*—The following have been noted:
myocardi[illegible]embling of the lips, tingling sensations
and efficien[illegible]es, dizziness, nausea, a sense of
met shortly [illegible]ess across the chest or abdomen.
vascular system. [illegible] no manifestations referable
D.—Systolic 140, [illegible] have been no untoward
pulse rate 64. Abnormal

aftereffects. No chills or elevation of temperature were observed with a single exception. A patient with a common duct stone and icterus had several chills with fever during his short stay in the hospital and suffered a chill with a rise in temperature one hour after the citrate was given. No alteration in blood pressure had been noted either during or after the introduction of the citrate. Sodium citrate is said to have a toxic effect on the kidneys, but we have been unable to verify this clinically even when very large doses were given. Up to the present the drug has been administered in only one patient suffering from a severe nephritis, and in this instance no toxic manifestations were noted. In short, we wish to emphasize the fact that no evidences of toxicity were observed in any of the hundred injections of large doses of sodium citrate that we have given up to and including a dose of fourteen grams.

Turning now to the effects of large doses of sodium citrate administered intravenously in the human being, we may say at once that they correspond closely to those observed in our animal experiments. A similar drop in coagulation time occurs, the same change of the color of the venous blood to a light arterial tint is usually seen, and in all the cases of bleeding we have been able to observe, the hemorrhage was controlled.

Change in coagulation time.—A typical curve of coagulation time after the optimum dose of six grams may be described as follows, the patient having a coagulation time of ten minutes: Five minutes after the injection the coagulation time drops to seven minutes, ten minutes later it reaches five minutes, in one half hour the coagulation time is between two and three minutes. The peak is reached some forty minutes after the injection, and is sustained in the neighborhood of a two minute coagulation time for an additional hour. The return to the normal then begins, but this is much more gradual than the rapid drop after the injection. In six hours the coagulation time reaches five minutes. Twelve hours after the injection it is still about seven minutes. The return to the normal occurs after a variable time; in some instances the normal is reached in twenty-four hours, in others not until forty-eight hours or longer after the administration of the drug. No subsequent changes in coagulation time have been seen in observations taken two, three, four, five and six days after injections. The curve described is typical and figures closely approximating those given have been obtained in every instance in which such frequent observations could be taken. Of noteworthy interest is the fact that the coagulation time was shortened by citrate injections to a similarly striking degree in patients in which it was pathologically prolonged, especially in jaundice. We have noted drops in coagulation time from sixteen minutes before to two minutes following the injection.

In the past few months almost all patients admitted to our surgical service received citrate injections and the pronounced change in coagulation time was seen in nearly every instance, regardless of the disease from which the patient was suffering. The coagulation reaction following citrate administered in optimum doses did not occur in a very few patients. The condition for which these patients came to the hospital offered no explanation for the absence of the reaction although it is possibly suggestive that three of them were suffering from cirrhosis of the liver with jaundice. The absence of any change in coagulation time following citrate injection in these cases will only be accounted for when the cause of the reaction is clearly understood. The cause of the changes occurring after citrate injection is unknown at the present time.

There are some cases in which a more prolonged effect is desired than that obtained from a single dose of citrate. We have attempted to sustain the shortened coagulation time by repeating the dose after twenty-four to thirty-six hours. As a result the drop in coagulation time has been maintained in some instances for several days, to return to the normal in about a week; in other cases the second dose has had little or no additional effect. We believe that the subcutaneous or possibly rectal administration of sodium citrate will possibly prove a better method when a slower and more sustained result is desired and we are now engaged in studying this question.

Change in the color of the blood.—The change in the color of the venous blood to an arterial tint is usually present within five minutes of the introduction of the citrate solution. The return to the normal hue of venous blood is noted as the coagulation time again approaches that existing before the injection. In the small group of cases in which the coagulation reaction did not occur no change in the color of the blood was noted and we therefore regard this alteration in color as a characteristic element in the reaction. The appearance is that of venous blood that has been oxidized. We believe that spectroscopic and other studies may demonstrate that oxidization occurs as the result of the citrate injections.

Consistency of the clot.—Concerning the clot that forms in the test tube or at the mouth of an injured vessel, there is every reason to believe that it is at least as solid after citrate injections as normally. In fact, we have gained the impression that a tougher and more solid coagulum results from the introduction of the citrate. The best demonstration of the adequacy of the clot is the permanent cessation of bleeding in the great majority of instances. There was no evidence of intravascular clotting in any of our experiments, and in none of the patients to whom citrate was given was there any suggestion of thrombosis or embolism.

Control of bleeding.—Our evidence of the striking and sometimes remarkable effects of large doses of sodium citrate on bleeding in human beings rests on purely clinical observations. It can truly be said that bleeding would have ceased spontaneously in some or perhaps many of the cases we have studied. Up to the present time, however, bleeding has been checked in every instance in which the citrate injection has been given for that purpose. The best proof that the cessation of hemorrhage is due to the citrate injection is that bleeding regularly begins to be controlled within fifteen minutes after the administration of the drug.

Unless the underlying cause of a hemorrhage is cared for, recurrence of bleeding may of course take place, for the sodium citrate injection is only employed for the immediate control of hemorrhage. For example, a patient suffering from an incomplete abortion had been bleeding continuously for several days; bleeding stopped for twelve hours after the injection, and then recurred and continued until the uterus was emptied. There were three cases in which hemorrhage controlled by sodium citrate recurred after varying periods of time, to be definitely controlled by a second dose of the drug. These were one case of hemorrhage from a colostomy wound for carcinoma of the rectum; one of hemorrhage from the abdominal wall after an exploratory laparotomy for an inoperable carcinoma in a jaundiced patient, and one case of polycythemia with bleeding from the gums after the extraction of several teeth.

In all the remaining cases a single dose of sodium citrate permanently controlled the hemorrhage. These cases may be arranged in four groups:

Internal hemorrhage. — Bleeding was controlled in cases of hematemesis, rupture of the liver, traumatic hemothorax, hemoptysis, and possibly in a case of cerebral hemorrhage.

External hemorrhage.—These cases were varied. They included lacerated wounds, hemorrhage from the rectum, bleeding from raw areas left bare by operation, and postoperative hemorrhages from the rectum, gallbladder and prostatic beds.

Bleeding encountered at operation.—There were a number of impressive examples at cranial, abdominal, and other operations. A remarkable instance was a case that proved to be cirrhosis of the liver with icterus. The intravenous injection of citrate was begun as the abdominal incision was made. In exploring the undersurface of the liver an alarming venous hemorrhage was started. Packings absolutely failed to control this, and the bleeding point or area could not be exposed. Without any other measure being employed, the bleeding quite suddenly became less and ceased soon after. The control of the hemorrhage occurred fifteen to twenty minutes after the introduction of the citrate. The excess blood was sponged away and the operation continued without further bleeding.

Bleeding anticipated during or after operation.—In some cases it was difficult or impossible to deduce any effect from the citrate injection because of the necessary sponging at operation. In other instances in which citrate was given the operative field was manifestly less bloody than could have been expected. A striking example was a case of carcinoma in which operation was performed recently by Dr. Lilienthal. A T incision was made, splitting the larynx and widely opening the pharynx transversely to expose the neoplasm. Except for a few arteries that were caught and ligated, the field was entirely free from oozing. Other cases were instances of jaundice with prolonged coagulation time. Examples of anticipated postoperative oozing that did not occur after citrate injection are cases of osteoplastic craniotomy and operations for acute osteomyelitis in which oozing was still going on at the end of operation. In fact, there has not been a single instance of a postoperative hematoma in the wound since citrate injections have been used as a routine for all cases at the time of operation.

CONCLUSIONS.

1. The slow intravenous administration of large doses of sodium citrate given intermittently over a period of ten to fifteen minutes is nontoxic both experimentally and in the human being. In the latter, massive doses up to fourteen grams have been given without any toxic manifestations.

2. The rapid intravenous administration of sodium citrate is dangerous and may be fatal both experimentally and in the human being.

3. The optimum dose for adults is six to eight grams in a thirty per cent. solution and one to three grams in greater dilution for children. Doses for infants have not been determined.

4. All types of bleeding, internal as well as surgical, that have been encountered, have been controlled by large doses of sodium citrate administered intravenously.

5. Large doses of sodium citrate have been successively used to obviate hemorrhage in cases in which bleeding was anticipated at operation.

6. This method offers a large sphere of usefulness in the treatment of bleeding, is a simple application, and has proved both nontoxic and safe in our hands.

We wish to extend our thanks to Dr. Howard Lilienthal for his courtesy and hearty cooperation in this work.

REFERENCES.

1. Weil, R.: *Journal A. M. A.*, 1915, 64, p. 425.
2. Ottenberg, R.: *Proceedings of the Society of Experimental Medicine and Biology*, 1916, 13, p. 104.
3. Kinsella, R., and Brown, G.: *Journal A. M. A.*, 1920, 74, p. 1070.

1000 Park Avenue.
225 West Seventy-first Street.

PHENOIODINE IN PNEUMONIA, SEPTIC INFECTIONS, AND ERYSIPELAS.

By J. A. Husik, A. B., M. D.,
Brooklyn, N. Y.

This report is based on the work done by me in my private practice and subjoined will be found a presentation of cases by Dr. Herman Grad, attending gynecologist at the Woman's Hospital, New York, who at my request made use of the treatment in patients suffering from puerperal sepsis, postoperative pneumonia, and erysipelas.

I wish to state at the outset that I have no new theories to propound, that I lay no claim to the discovery of any specifics, and that I do not pretend to understand fully how the combination acts. All I wish to present here is the clinical results following the use of a combination of phenol and iodine when administered intramuscularly as observed by myself and others. It will not be out of the way, however, to mention the fact that some scientific investigation with phenoiodine solution was carried out during the war at one of the naval stations by Dr. William T. Moynan and here the fact was brought to light that the injection of phenoiodine, intramuscularly, into the healthy human being produced a marked leucocytosis. The leucocytosis thus produced, however, was of temporary duration lasting no longer than three hours. Subsequent injections also served to bring about the same result but the leucocytosis was then neither as marked nor as lasting as after the first administration of the drug. Based upon these findings, Dr. Moynan used phenoiodine injections in the treatment of soldiers and sailors during an outbreak of septic sore throat and the results were described as highly satisfactory. The infection was rapidly overcome and the patients recovered within several days after the treatment was begun. I hope a separate report at some future date will be presented by Dr. Moynan.

The method of preparing the phenoiodine will be given in detail at the end of this paper so as to enable anyone to make the drug for himself. The cost of the materials is so trifling as to be negligible. The labor involved is quite considerable but will be found no obstacle where the drug is really needed. It is my hope that physicians and surgeons in charge of large hospitals will give this form of therapeusis a fair and thorough trial. For it is my conviction that the therapeutic measure here advocated is of the greatest value when used at the proper time and in the proper case, that by its use a grave infection will often be turned into a mild one, that here and there the sacrifice of a limb will be avoided and that occasionally life itself will be saved.

PNEUMONIA.

Case I.—Male, aged sixteen, schoolboy. Family and previous history unimportant. On March 2, 1920, late in the afternoon, the patient experienced a severe chill which lasted ten minutes, and he complained of headache. Home remedies were first resorted to and an ordinary expectorant mixture was prescribed the next day by his physician. The patient continued to grow worse till the evening of the 4th. At this point I was summoned to see the patient. I found him in a condition of delirium. He was mumbling incoherently to himself. The temperature was 104.4° F., pulse 128, strong and bounding; respirations were short and rapid, averaging 36. He was frequently coughing up a thick, tenacious, mucopurulent and bloody discharge. Physical examination showed consolidation of the upper right lobe and the greater portion of the lower left lobe.

Treatment was instituted and carried out as follows. Sinapism to chest and lower limbs and an ice pack to the head; digitol in ten minim doses every three hours and a half ounce of whiskey in four ounces of milk were administered every three hours. Five c.c. of phenoiodine solution was now administered intramuscularly and repeated in six hours. At the end of twelve hours following the first injection temperature fell to 100°F.; pulse 106; respiration 24. A third injection was now administered. The patient's general condition underwent a most marked change within the twelve hours. He was no longer delirious, his breathing was deeper and free from pain, the cough lessened and the bloody discharge disappeared. From a condition pointing apparently to a fatal issue all signs seemed to point to a speedy recovery. On March 5th, at 8 p. m. the temperature rose to 100.5°

and the patient's general condition was not quite as good as during the day. A fourth injection of phenoiodine was now made. On the morning of the 6th the patient's temperature fell to normal apparently without the intervention of the usually expected crisis. In short, thirty-six hours after the first injection of phenoiodine and approximately ninety-six hours after the initial chill the pneumonic infection was overcome. All stimulation and injections were now discontinued, an expectorant was ordered and the patient made an uneventful recovery.

Case II.—M. S., male, aged twenty-four; married; merchant by occupation. Family and previous personal history have no bearing on the case. On May 6, 1920, patient fell ill with the grippe. His condition soon improved, but on the evening of May 9th he experienced a slight sensation of chilliness, complained of headache and began to cough. The patient remained in bed using all he knew in the way of home remedies until I was summoned on May 11th, late in the afternoon. At this time the patient complained chiefly of his cough, pain in the left side and a feeling of extreme weakness. The cough was harsh and unproductive and no bloody expectoration was in evidence. Temperature was 104°F., pulse 120 and respiration only 24. However, physical examination revealed an area of consolidation in the left lower lobe posteriorly. which in the presence of the patient's history and symptoms could not be taken for any other condition than that of a lobar pneumonia. Bronchial breathing over the area involved was marked and a distinct dull note over the area could easily be delimited.

The treatment consisted in moderate stimulation with whiskey and digitol. One injection of phenoiodine was administered at 5 p. m. and repeated at 12 p. m. On May 12th, at 9 a. m., the patient's temperature was 100° F.; pulse 100; respiration 22. A third injection of phenoiodine was now administered and repeated at 8 p. m. The following morning the temperature dropped to 98° F. and pulse to 90. In this case, as in the first one, there was no marked condition of crisis. The temperature came down gradually. The treatment thereafter was directed to alleviating the cough which continued troublesome for about a week in the absence of any fever or other symptoms of systemic infection. It took about ten days for the pneumonic signs to disappear completely from the lung. It would seem from this that the administration of phenoiodine intramuscularly in certain cases of pneumonia is capable of destroying the active infection quite early in the course of the disease process, although it takes the usual time for the products of the infection to become absorbed and eliminated from the system.

Case III.—Girl, aged four. Had always been well except for several attacks of bronchitis. For a day or two immediately preceding this attack the child had a slight cough which parents did not regard as important. On January 12, 1917, patient became suddenly very ill, complained of headache and vomited once. The patient was first seen at 9 p. m. of the same day. At this time the child looked critically ill. The temperature was 105.5°, pulse rate was 160, and respirations 48. Delirium was not present but the patient was restless and paid little attention to what was going on about her. Physical examination revealed a small patch over the right lower lobe where both anteriorly and posteriorly soft, moist râles could be heard. On auscultation bronchovesicular breathing could be made out over the area involved and the percussion note was slightly duller than over the rest of the right lung. The left lung was free from disease. The usual local and stimulant medication was ordered and half the adult dose of phenoiodine was administered into the gluteal muscles. This was repeated after twelve hours. At the end of the first twenty-four hour period following first injection temperature fell to 99° F., pulse to 108, and respirations to 28. No further injections were made. Ordinary stimulation was continued for several days longer and expectorant treatment was added. The child made a full recovery in a week. There was no further rise in temperature. This was the only case in which such marked and rapid change had been observed as it is also the only one in which treatment was begun so early in the course of the disease.

Case IV.—This is a case of inhalation pneumonia. An Italian laborer aged forty-four, painter by occupation, fell down a scaffolding and sustained a fracture of the nose. He received the usual treatment by a surgeon at a hospital. Several days later cough and pain developed in the right side of the chest anteriorly. The pain was referred to the sternum. His temperature soon rose to 103.6°, pulse to 114, respirations 30. The cough was unproductive at first and no blood was present. Physical examination showed a small area of the right lung presenting the usual signs of inflammation in this organ. Râles were present, with modified vesicular breathing and a dull percussion note. The attending surgeon agreed that we were dealing with an inhalation pneumonia. Treatment was now begun and consisted in the ordinary form of stimulation and phenoiodine injections were administered once every eight hours. In all, five injections were made. At the end of forty-eight hours the patient's temperature, pulse, and respirations came down to normal and he made a perfect recovery without any further trouble from the infection in his lung.

Case V.—This case is reported under pneumonia for the reason that a pulmonary process developed in both lungs during the course of a far graver systemic condition. The patient was a middleaged woman, single, high school teacher, weighed 240 pounds. Her family history was negative. The only fact in her personal history that had any bearing on the case was that she had been a frequent sufferer from tonsillar infections and that she had had a polyarthritis several times before the onset of the present illness. On June 6, 1918, the patient suffered from an attack of follicular tonsillitis from which she rapidly recovered. She remained well until the 26th, when suddenly her joints began to swell. Every large joint in the body became involved in the course of several days. On July 1st there appeared a murmur over the mitral area, and on July 3rd there developed a pulmonic infection in both lungs. A blood culture made in this case showed the streptococcus. The discharge from the lungs showed both the streptococcus and the pneumococcus. The urine showed albumin, numerous pus cells, and granular and hyaline casts. The temperature varied between 103° and 106° F.; pulse range was between 120 and 140, and respirations averaged 36.

Through the courtesy of Dr. Ellen Lysaght, the attending physician, I was called in to see the patient on the third day after the appearance of the pneumonic lesions. It will be admitted that in the presence of the findings stated above the condition of the patient was most serious, the prognosis grave and a fatal issue was the termination to be expected. At this point, however, injections of phenoiodine were commenced at intervals of four hours. All antirheumatic treatment previously employed was discontinued; stimulation was given as before. After two days of treatment the patient showed a great deal of improvement. The swellings in the joints were markedly decreased, the lung condition improved, the temperature range fell to between 101° and 102° F. Her pulse and respirations showed a marked change for the better. The injections of phenoiodine were now reduced to three daily. With the reduction in the frequency of phenoiodine administration all the symptoms and signs showed a tendency to become increased so that more frequent injections had again to be resorted to. In all, ninety-six injections were administered during the course of the illness, which lasted six weeks. By August 15th the patient's condition became normal. The infection was completely overcome. On September 15th a pleurisy with effusion developed. Thoracocentesis was now done and a quart of turbid fluid removed from the chest but there was no pus. She again made a rapid and complete recovery. On January 1, 1919, the patient resumed her work of teaching and has remained well since. The latest report by Dr. Lysaght states that there is at present only a slight cardiac murmur over the mitral area.

Other cases of pneumonia could be reported from my own practice as well as from the work of others who have employed the treatment, but that would only be tedious repetition. One fact should here be emphasized. In order to be efficacious the treatment must be instituted as early as possible in the course of the disease. When started seventy-two hours after the onset of the pneumonia it has little influence on the course of the disease. I may also add that while no bacteriological studies have been made except in the instance mentioned above it is my opinion that those pneumonias will be chiefly influenced by the treatment in which the pus forming group of bacteria are as much implicated in the production of the toxemia as those that belong to the pneumococcic group.

SEPTIC INFECTION.

Case. VI.—A laborer sustained an injury of the hand. Three days later his arm began to swell. In spite of the usual treatment applied to the local wound the arm continued to grow worse. Six days after the infliction of the wound the infected arm grew to double the normal size, the patient became septic and showed the usual septic temperature varying between 103° and 106°. The pulse varied between 110 and 140. He had frequent and profuse perspiration and was greatly prostrated. A surgeon was consulted and he advised immediate removal to the hospital for the purpose of amputation at the shoulder joint. The patient refused. At this point treatment by phenoiodine injections was commenced. One five c. c. ampoule was administered every three hours for the first six doses. The patient's condition had by now improved so markedly that it was deemed safe to reduce the frequency of the injection to once every six hours. At the end of forty-eight hours the temperature fell to 99°F., pulse to 85. The swelling was considerably reduced. Prostration was no longer present. Fifteen injections were administered in all and the patient made a very good recovery within a week after treatment was begun. Other treatment consisted in stimulation with alcohol and keeping up of the strength by liquid diet. A second case practically identical in its details was treated the same way and also with the same result.

ERYSIPELAS.

Case VII.—Male; aged thirty-one; school teacher; single. Family and personal histories were unimportant. On a Monday afternoon when returning from school he began to feel an itching and burning in his right foot. When the shoe was removed the foot was found to be red, the discoloration extending over the entire dorsum with a sharp line of demarcation between the healthy and diseased areas. The same evening the patient was seen by me together with Dr. William T. Moynan, who was then connected with the Post-Graduate Hospital, New York. We both agreed that the case was one of erysipelas. The temperature at 9 p. m. was 104°F.; pulse 114. The patient, however, did not look very ill. The treatment consisted in the immediate administration of phenoiodine followed by the local application of an ichthyol dressing. No medication by mouth was ordered. The following morning, 10 a. m., patient felt much better. The itching and burning subsided and the patient's temperature fell to 97.8°F.; pulse 70. A second and last administration of the phenoiodine was now made and the ichthyol dressing was continued for several days longer. No other treatment was employed. The recovery was complete as evidenced by the fact that on the following Saturday the patient was able to attend a ball and to participate in the dancing.

Case VIII.—Female; Italian; aged thirty; married; had two children. February 2, 1919, the patient began to complain of a burning sensation in both cheeks. I was first summoned on the morning of February 4th. I found the patient quite ill. Her temperature was 103.8°F.; pulse 120. She complained of headache and a feeling of nausea. Did not vomit. Both cheeks by this time showed considerable tumefaction and sharply defined areas of redness covered both cheeks extending from the angle of the mouth almost to the ear, and from the lower borders of the rami of the jaw upward toward the zygoma. The erysipelatous areas were peculiarly symmetrical. The diagnosis of erysipelas was made and injections of phenoiodine were immediately instituted. One injection was made on the fourth and repeated eight hours later. On the morning of the 5th the patient was found markedly improved in every way. Tumefaction of the face was gone, pain and burning disappeared and instead of the intense redness the color of the cheeks became light pink. Temperature and pulse were found to be normal. A simple tonic was now prescribed and the patient was discharged. She made a complete recovery.

Case IX.—Male, aged sixty-four, watchman. Previous history unknown. This patient had a deep and long incision made along the back of the neck by his physician who mistook the condition for a cellulitis. No pus was found. There was an intense red area occupying the whole back of the neck. There was a sharp demarcation line between the diseased and healthy skin. The patient was found to be very ill indeed. His temperature was 104°, pulse 120 and he was greatly prostrated. One injection of phenoiodine was made and repeated the next morning. At my second visit the patient was very much improved. His temperature fell to 99° and varied between that and 100° for several days longer. Owing to the patient's age, his low general vitality and the poor hygienic surroundings the incision made was about six weeks in the healing. Also because of these conditions an abscess developed at the sight of injection. The pus was readily evacuated by a small incision and healed long before the incision in the neck closed up. In the course of my experience extending over six years this is the only instance where abscess formation had occurred. This was due in my opinion to the patient's low state of vitality as well as to the comparatively filthy surroundings in which patient lived.

UNTOWARD EFFECTS.

In a period of over six years during which I have administered, conservatively speaking, between three and four thousand injections I have seen no untoward effects save the case of abscess mentioned. I have observed no reactions local or general following the administration of the drug. Some of the patients can taste the drug soon after it has been administered. Others smell it in their perspiration and in the urine. It can be readily recovered from the urine and the feces. However, the following was reported to me by others who made use of the drug. In one case, in a woman eighty-four years of age, who had been suffering for three months from unresolved pneumonia, there developed a suppression of the urine after the exhibition of the drug. Another physician who had used the drug reported the onset of an acute nephritis. In this case we believe it was pure coincidence. For in dozens of other instances in which he had administered the drug he had observed no ill effects whatever. In one of the cases reported by me above the presence of albumin, pus and casts in the urine did not contraindicate the use of the drug. Ninety-six injections were administered in that case and if the drug had the natural tendency to bring on an acute nephritis it should have done so in that case. But instead of that the kidney condition cleared up together with the rest of the infectious process. Dr. Herman Grad reports abscess formation. However, the administration of the drug was in these cases made by the nurses in charge and good judgment is necessary in selecting the site for injection where the same has to be given every three or four hours. No abscess formation should occur with proper technic. In Dr. Grad's patients, however, even the formation of abscess will be no bar to the administration of the drug for in them the question of saving the patient's life is the immediately pressing one. I know of no other instance of any ill effects. If there are any they were not reported to me.

METHOD OF PREPARING THE DRUG.

The iodine to be used must be resublimed at least several times. For each dose to be made four grains of phenol and two grains of iodine are measured off accurately and placed in an Ehrlenmeyer flask. Five c.c. of a sterile normal saline solution is now added for each dose to be made and the whole is placed in a water bath from one to two hours. This process results in the formation of the monoiodide of phenol plus a very small quantity of the diiodide. The liquid is now allowed to stand till it has cooled perfectly and the diiodide has separated out and settled to the bottom. The monoiodide solution is now poured off into a sterile container and transferred to amber colored ampoules of five c. c. capacity. These ampoules must be kept in the dark in which manner the product remains stable for at least six months.

Dr. Grad's report follows.

2559 Bedford Avenue.

PHENOIODINE IN PUERPERAL SEPSIS AND POSTOPERATIVE PNEUMONIA.

By Herman Grad, M. D.,
New York,
Attending Gynecologist to Woman's Hospital.

My attention was called to phenoiodine by Dr. Husik, several years ago, and I have used it as a therapeutic measure in several cases of puerperal sepsis and in postoperative pneumonia with much success. I feel that it should be used in every case of puerperal sepsis. As a therapeutic measure it is worthy of careful investigation by clinicians as well as laboratory workers. I feel that it is a therapeutic measure of great value and has immense possibilities for favorably influencing septic conditions of the body.

My experience with phenoiodine is entirely a clinical one. I have made no experiments with the solution and know nothing of its physiological action. All I can say is that it does favorably influence septic processes in puerperal septicemia, and that the clinical course of the disease is markedly affected by the administration of the drug. In septic postoperative pneumonia it has a decidedly beneficial effect which is often striking. The administration of a few doses of phenoiodine will cause a prompt amelioration of symptoms and will turn a very distressing condition into a safe clinical course of the disease. I have seen cases with most alarming clinical symptoms, high temperatures, severe pain in the chest with a distressing, dry, harassing cough, benefited by a few doses of phenoiodine to a phenomenal degree. The symptoms promptly subside, expectoration becomes profuse, temperature and pain subside and convalescence becomes established. It is the remedy *par excellence*. I am so convinced of the positive therapeutic action of phenoiodine in postoperative pneumonia that I have no hesitation in calling it a life saving therapeutic measure.

In a case of erysipelas its action was most marked. Without any local application the lymphangitis subsided promptly. The tumefaction in the skin and the pain promptly disappeared and in less than forty-eight hours the disease was under control. Of course one case proves little but Dr. Husik tells me that the action of phenoiodine in erysipelas is striking.

I beg to report the following cases:

Case I.—Mrs. R., aged thirty-one, para three, was confined ten days previous to my consultation with a low forceps operation. She sustained a moderate degree of perineal laceration. On the third day a sepsis appeared. There was a chill and the temperature rose to 105° F. For the next six days the temperature fluctuated between 100° and 105°. There was pain in the lower abdomen and profuse perspiration. Abdominal distention, coated tongue and constipation were all present. The patient was in a great state of apprehension having been told that an operation was necessary to evacuate pus from the pelvis. I was called in consultation on this account. Pelvic examination showed uterus and adnexa fixed by a solid exudate in the pelvis with no point of fluctuation. I advised against operative interference and recommended phenoiodine injections. Within three days after the first injection the temperature showed a decided tendency to subside and within a week the temperature was normal and remained so. The patient received thirty-six injections in all. The pelvic exudate completely disappeared with no pus formation. During the septic process a polyarthritis developed, both knees, one wrist, and both sacroiliac joints being involved. These joint involvements promptly subsided the last one to disappear being the right sacroiliac joint. The patient made a complete recovery. My feeling in this case is that the patient would have recovered without the use of phenoiodine but that her recovery would have been a matter of months instead of weeks. That phenoiodine hastened her recovery and made her recovery more complete without further complications of a septic nature is beyond doubt.

The following case of puerperal sepsis was a remarkable one and I feel that recovery was to a very large measure due to the use of phenoiodine. I say this because I wish to be conservative in my statements. The truth of the matter is that clinically the case was a fatal one of puerperal sepsis and that phenoiodine was a life saving agent in this instance.

Case II.—The patient was a young woman, twenty-one years old, primipara, who was confined six days before my consultation. She had been confined in a tenement house. There had been a forceps operation and the placenta was removed manually as well as by curette. Two days later her temperature rose to 102° F., and she was again curetted. The temperature now went up to 106° and she had severe rigors and vomiting. Her abdomen was distended and she was not only profoundly septic but she also showed signs of an active peritonitis. When I saw the patient she presented the picture of a fatal case of puerperal sepsis. Her temperature was 106° and she was delirious. Pelvic examination showed a tender, subinvoluted uterus with no exudate or masses. Her history, clinical signs, her pulse and general appearance made so unfavorable an impression on me that I gave a fatal prognosis to the attending physician and a guarded prognosis to the family. However, phenoiodine injections were advised and it was to be used in five c.c. doses repeated every three hours. After eight doses a marked change occurred in the clinical course of the disease. The delirium disappeared, peritonitis subsided, temperature and pulse were lower, and in every way the patient was better. Twenty-four doses in all were administered and convalescence was established. Two large abscesses developed at the site of injection. The pus was evacuated and the patient made a complete recovery.

I have used phenoiodine in seven other cases of puerperal sepsis, in every case with benefit to the patient. It would be useless to detail their histories as it would be a repetition of the two cases reported above. Suffice it to say that my experience with this therapeutic agent leads me to feel that it favorably influences puerperal sepsis and should be used in every case.

POSTOPERATIVE PNEUMONIA.

I was greatly impressed with the therapeutic value of phenoiodine in the following case of postoperative pneumonia.

Case III.—Mrs. A., aged twenty-nine, was operated on for a subacute appendicitis and retroversion of the uterus. She was a short necked, fleshy woman subject to bronchitis. At the time of the operation there was no sign of pulmonary disturbance. The operation was a comparatively short one, but on the day following the anesthesia cough and pain in the chest developed. Examination of the chest showed a consolidated right lower lobe of the lung. The temperature rose to 104° F., with a high pulse, great pain in the chest, the cough was distressing, lips blue, fingernails blue, with frequent and embarrassing respiration. The patient appeared very ill and it was distressing to note that none of the usual therapeutic measures brought relief to the patient. Twenty-four hours later the prognosis appeared doubtful. The pneumonic process appeared to have extended and the opposite lung showed areas of involvement. The administration of phenoiodine was now started, five c. c. being administered intramuscularly every three hours. After the third dose the cough was less distressing, expectoration was established, and the patient slept for an hour.

This was the first sleep she had had since the operation without the use of morphine. Within twelve hours after the first dose of phenoiodine was administered a decided improvement had occurred in the condition of the patient, and after twenty-four hours a phenomenal improvement was apparent. The therapeutic effect of phenoiodine in this case was a revelation to me. Twenty-four hours later all her symptoms—pain, cough, temperature, rapid respiration, blue lips and nails—had abated, and convalescence was established.

I have used phenoiodine solution, kindly supplied by Dr. Husik, in five other cases of postoperative pneumonia and in every case the therapeutic effect was definite and effective. I have no hesitation in recommending this curative measure in every case of pneumonia coming on after operation. I feel sure that every surgeon will be interested because I know how promptly it acts and how beneficial it is to the patient.

In two cases of infarct pneumonia following operation, empyema developed in spite of the use of phenoiodine, and resection of the ribs had to be done. In both of these cases—one a gangrenous appendix and the other a septic cholecystitis—the pneumonia was most favorably influenced by the phenoiodine. This was shown by the prompt amelioration of cough, pain, rapid respiration and physical signs. I feel sure that in the use of phenoiodine as recommended by Dr. Husik we have a definite therapeutic measure that is as prompt as it is efficacious in its therapeutic action.

40 East Forty-first Street.

PHTHISIS PULMONALIS.*

By Albert C. Geyser, M. D.,
New York.

The subject of phthisis pulmonalis is such a large one and may be viewed from so many different angles that it will be possible for me merely to call attention to some of the more important and frequently misinterpreted phases of the disease. Neither will it be possible for me to introduce anything new. All that I shall say is well known to you, but I shall try to direct your attention to phases of the disease which may have escaped your attention heretofore. In fact, some of my statements may seem almost heretic. Whether my conception of this disease is right or wrong, I will leave to your judgment. I myself am guided entirely by the practical results obtained from therapeutic measures in harmony with my viewpoints.

CAUSE.

Two factors are necessary for the existence of this disease, namely, a suitable soil (lowered resistance), and the specific seed (the germ). A suitable soil is furnished by anything which lowers the physical resistance of the individual. The specific germ is always with us. In ninety per cent. of all human beings the germ is transmitted during intrauterine life. The other ten per cent. are promptly infected during their first few weeks of independent existence.

This disease is a concomitant of civilization. Only a few barbaric and semicivilized peoples are still free from it. Such individuals are virgin soil and become rapidly infected after contact with the civilized. The average life of the Eskimo is two and a half years after an attempt at becoming civilized. In civilized communities the disease is seldom or never propagated from the sick to the healthy. The apparently healthy are already tuberculized. They have either been infected during life *in utero* or immediately thereafter; they have recovered and are more or less immune; they harbor within their systems the germs. Everybody is a potential consumptive. Since the germs do not thrive and multiply, they have not the disease in fact, but are latent cases. A very few may become entirely free from the germs, but are nevertheless tuberculized. For confirmation I have only to point to the fact that neither doctors, nurses, nor attendants at sanatoria show any special percentage of infection. There are few cases on record where the husband or the wife have apparently infected each other. In families with consumptive children, only one or two showed the disease, yet in all these cases there was unhindered contact day in and day out.

BOVINE TUBERCULOSIS.

The acid fast bacillus found in cattle does not cause phthisis in the human. If the fresh milk, which may contain these bacilli, did cause the disease in the human, then the farmer's children would be the first ones to suffer, because they drink the fresh, warm milk. The dairy workers also would show a high percentage of infection, owing to their close and constant exposure. The children and individuals of the city, far removed from the cattle, living on pasteurized and sterilized milk, fall easy victims to the disease. It is more likely that the human phthisis patient by his expectoration infects the cattle. After the germ has passed through an existence in cattle, by attenuation it may have become weakened in the same manner as a germ of smallpox.

THE PHYSIOLOGICAL METHOD OF CURE.

Up to 1882 it was well known that persons who died from what was called phthisis or consumption showed after autopsy that their lungs were studded with small granules. These granules, or tubercles, were an ever present accompaniment of this disease. It was thought that they were either the result of or at least played an important part in the disease process, hence the term tubercle disease or tuberculosis. During the year of 1882, Koch, of Berlin, discovered that every one of these tubercles contained one or more acid fast bacilli; that these bacilli were surrounded first by a circular layer of giant cells, then by a layer of ovoid cells, and lastly by a third layer of round or leucocyte cells. Enmeshed within these last cells were usually some lime salts. In a completely formed tubercle there was not discovered a single trace of blood vessels, showing that the centrally located bacilli were by this means most effectually shut off from all outward communication or escape. The entire tubercle, however, might be expelled from the lungs the same as any other foreign body, or it might remain *in situ* as a bullet after having become encapsulated. The fibrous capsule surrounding a bullet or the formation of pus cells around a splinter are both analogous processes to the formation of the tubercles around the bacilli in the lung tissue.

---

*Delivered before the meeting of the American Association for Medicophysical Research, October 7, 1920, Chicago, Ill.

These three processes are physiological and not pathological. Tubercle formation, therefore, is a conservative process; it is Nature's method of making the otherwise injurious bacillus practically harmless. That such a process should not be interfered with is selfevident; on the contrary, it is our duty to assist Nature in her effort. All therapeutic measures not in harmony with natural laws, while they may appear highly scientific, are not physiological, therefore of questionable value.

For several centuries we have passed through tuberculosis crusades. In some countries they have taken on the appearance of actual persecutions of the unfortunates and the destruction of their belongings. During later years these crusades have donned the financial, political and educational garb. After all the crusades, isolations, tuberculin injections, creosote inunction and inhalation, the percentage of the stricken is about the same. The death rate has not changed and the building of sanatoria goes on. All this appears as proof positive that all of these measures have been tried and they have been found wanting.

PHYSIOLOGICAL TREATMENT OF PHTHISIS.

Under no circumstances should a patient be subjected to treatment based upon the x ray findings. It is just as illogical to treat a clinically symptom free patient for consumption because the x ray shows lesions as it is to treat a patient simply because he has a four plus Wassermann. Neither the x ray plate of the lungs nor the four plus Wassermann of the blood has any significance in the absence of clinical symptoms. I desire to call your attention to a few very important points. Do not treat the disease, but treat the patient. While this rule applies to all diseases and all patients, it is of especial value in consumption. Since every human being is more or less tuberculized, and since only one seventh of the entire race dies of consumption, it follows that there must be all grades of conditions between the two extremes. Not only that, but the consumptive is ever hopeful of recovery and this psychic condition must be taken advantage of to the fullest degree.

The treatment in general may be divided into local and constitutional. It is to be understood that every local treatment produces a constitutional effect and every constitutional measure affects the local lesion.

General constitutional therapy.—Consumption is a wasting disease; it uses up tissue faster than the patient can produce it; rest is therefore of paramount importance. To rest does not necessarily mean being in bed. Whenever possible, and as a rule it is always possible, the patient should spend only the regular hours during the night in bed. At all other times he should be fully dressed, though he may spend his time in a hammock or reclining chair. Whenever possible he should take some regular outdoor exercise from a mere fifteen minute walk to playing games. Do not worry about the fever; it will take care of itself—but more of this later.

Outdoor air.—The best climate for a patient with this disease is the one where he can spend twenty-four hours of each day out of doors. It matters little where this climate is found. As a general proposition for those who can afford it, it is South in the winter and North in the summer. The whole secret of the outdoor treatment is to be found in the fact that every person, sick or well, is surrounded by a certain circular zone in which his own emanations are continuously given off. A consumptive gives off a certain odor, the reinhalation of which is not conducive to his best interest. As long as such a person is confined to a room, so long is he obliged to undergo this reinhalation process; but while he is outdoors the air currents are constantly removing these personal emanations and as a result he breathes fresh air instead of his own stale effluvia.

Altitude.—Some patients do well at the higher, others at the lower altitudes; some succumb at both. It is not always easy to decide just where certain patients should be sent, assuming that they are to be sent away from home at all. As a general proposition the physically strong and robust patient with a good chest expansion will do well in the higher altitudes, while the weak, shallow chested individual does better at the sea level. There is yet a third class of patients, those who can take a deep breath but through force of habit never do. Such a patient should be sent to a gradually increasing altitude, while those who are perfectly willing but cannot take a deep breath must live as near to the sea level as possible. Now these are arbitrary statements, but they are in perfect harmony with the laws of physiology. The barometric pressure at the sea level is fifteen pounds to the square inch; the higher we ascend into the mountainous regions, the less is the air pressure. The more rarefied the air becomes, the greater must be the effort at breathing. For suitable cases such an effort becomes a lung gymnastic which must be of benefit to the individual. When, therefore, the all too common error is made of sending the weak, frail, small chested individual to the mountains, he not only fails to improve, but spends what little power he may possess in a useless effort; he literally wears himself out trying to breathe sufficient oxygen to maintain life. The average patient recovers best at or near the same atmospheric and climatic conditions where he or his parents were born. Such conditions are natural to him; he does not have to acclimate himself.

Diet.—Consumption is a disease in which either tissue metamorphosis is markedly increased or else there is some interference with tissue assimilation. It is a process of gradual wasting. Proteins are the foodstuffs that maintain body weight and repair tissue waste; they are therefore indicated. Do not attempt to fatten a patient; a patient may gain in weight, yet suffer from consumption. As a general proposition allow each patient to select his own food, especially those foods which the patient knows from actual experience to have agreed best with him in the past.

I would warn you against urging the use of raw eggs. Raw albumen is not only difficult to digest, but is likely to cause the patient to become "bilious." There is, on the contrary, not the least objection to the use of hard boiled eggs, providing they are known to be reasonably fresh. Pure, rich milk, or fresh cream and water, is a valuable asset. Do not use pasteurized or sterilized milk if you can help it; such milk is lacking in vitamines. Since the physiological process of forming tubercles requires lime salts, there is no better or more natural way of obtaining these than by having the patient take one or two ounces of clam or oyster juice once or twice a week.

Hygiene.—No matter how well a room may be ventilated, it does not compare with outdoor air. Every consumptive must be taught how to breathe properly; the breathing is too shallow in all of them. Beside the usual bathing, a patient must take a hot bath at least every other day. The bath must produce free perspiration and be continued not less than fifteen to thirty minutes. The hot bath, at a temperature of 107° F., is followed by a short cooling bath at a temperature of 80° F. This prepares the patient for a rub down or light massage just before retiring.

Whether there exists constipation or not, the rectal douche should be used at least on alternate days. Do not fear the douching habit—there is no more harm in regularly douching the rectum than there is in regular mouth washings.

Local treatment.—The patient's own blood must be caused to contain all the elements necessary for a cure. When the hemoglobin percentage is below eighty, the intravenous injection of cacodylate of iron is the only remedy indicated. Five c. c. are used once or twice a week until the blood improves. At the present time there is only one way in which the amount of blood can be increased through the lung tissue, and that is by the use of diathermia. It heats the entire pulmonary area through and through; it dilates the pulmonary capillary system, thereby causing diapedesis of the leucocytes. The fixed cells respond as a result of this by the formation of giant cells around the bacilli; because of the capillary dilatation and the increased diapedesis, the wandering cells surround the giant cells, completing Nature's method by the creation of the all necessary tubercle formation. The earthy material from the clam and oyster broth furnishes the necessary lime salt which is enmeshed in the third or outer layer of each tubercle to make assurance doubly sure that the escape and future damage by the bacillus is made impossible.

Temperature.—Just a few words concerning the fever. The irregular temperature is a curative process; it is the result of reaction to something within the system. It is also evident that no matter how high this temperature may be, it is inadequate in amount. It may be adequate for the time being, the temperature returning to normal or, from exhaustion, to subnormal. There may be a new pouring out of that something which caused the first reaction, so that we have a continuous attempt on the part of the system to overcome or cure something. Taking this view of the rise and fall of the patient's temperature, are we warranted in doing anything that would interfere with this curative process?

The answer is selfevident. The patient's temperature should be taken upon awakening in the morning before getting up, again during the middle of the day, and once more in the evening. These three temperatures are then added together and divided by three. If the quotient shows one or two degrees above normal, that patient is in a fair way to recovery; if, however, the patient's daily average temperature is below normal, the prognosis is correspondingly bad. The temperature in consumption may be too low; it is never too high. This explains the efficacy of the diathermic phase of the high frequency current. One must, however, be certain that the voltage is low while the frequency and the amperage is correspondingly high.

Technic.—The high frequency machine which I am about to demonstrate is of the telatherm type. I have used this particular type for several years now. It has undergone many changes, and I wish to express my appreciation of the cheerful assistance always offered by the manufacturer in carrying out the various modifications as time and experience dictated. Today we have as a result a high frequency apparatus of low voltage and unusually high frequency and a wide range of amperage. Either the diathermia machine, an earlier model, or the telatherm, this latest type, answers our purpose perfectly.

The ambulatory patient who comes to your office should be treated at least every other day. A strip of flexible metal four by eight inches is placed over the spinal column and connected with one of the binding posts. The other flexible tin, five by six inches, is placed across the chest. Before applying these electrodes they are moistened with soap lather to insure better contact with the bare skin. The current is turned on until a meter shows a reading of 1500 milliamperes. The average time consumed is thirty to forty-five minutes. If no untoward symptoms occur after the second week, the current is gradually increased to 2000 and later to 2500 milliamperes, the full output of the machine. After the electrodes have been removed the parts are sponged with cold water and the patient advised to rest for one hour in the recumbent position.

All cases are divided into first, second and third stages. First stage cases should show one hundred per cent. cures; that is, they should be converted from open cases into latent ones. During the second stage from sixty to eighty per cent. of closed cases may confidently be expected; while during the third stage only occasionally a case does become arrested, nearly all of the patients are made very comfortable and their lives prolonged by many years. While this short review of so large subject is entirely inadequate, I hope that the discussion will bring out many of the points necessarily omitted.

301 West Ninety-first Street.

EXPERIENCES IN NARCOTIC DRUG CONTROL IN THE STATE OF NEW YORK.*

By Sara Graham-Mulhall,
New York,
First Deputy Commissioner, State of New York Department of Narcotic Drug Control.

As administrator of the First District, which includes the Greater City of New York, where drug addiction has so focussed that the city is called the plague spot of the country, my task has been to study intensively a hitherto insoluble problem and to interpret and apply the law. My work may be classified as both repressive and humanely constructive. I have secured wholehearted cooperation and support from physicians, manufacturers, wholesalers, and druggists, in my campaign against the misuse of drugs of addiction. The results achieved are due in large measure to the success of these methods of cooperation. The repressive work has grown out of the department's supervision of the transactions in drugs by certain physicians, registered dealers and druggists, resulting in the detection of irregularities, frauds and illegitimate practices. Some idea of the vastness of this whole narcotic problem may be gathered from the following number of certificates issued:

Physicians	10,364
Apothecaries	4,415
Wholesalers and manufacturers	286
Dentists	2,275
Veterinarians	342
Institutions and hospitals	336

MANUFACTURERS AND WHOLESALERS.

With the exception of medicine prescribed for patients by physicians, all orders for narcotic drugs involving the purchase or transfer of opium or cocaine or their derivatives must be made on official order blanks, serially numbered, which may be obtained from the Department of Narcotic Drug Control by registered dealers or users, or by government, public, or private hospitals. The only exceptions to this provision are, first, the permission to sell certain exempt preparations without any formal blanks, these preparations being remedies and medicines containing not more than a specified small amount of drug not considered dangerous and known as the lawful quantity; second, the exemption of such preparations as liniments and other ointments, which, while containing more than the lawful quantity, are in such form that the drug cannot be used except for external purposes. A record must be kept, however, even of these preparations.

PAREGORIC NO LONGER EXEMPT.

Although heretofore exempt, a late ruling has brought paregoric under control. At Bluefield, West Virginia, in May, 1919, a druggist was found guilty of selling paregoric for other than medicinal purposes to an addict, through a second party, for several months. The penalty was imprisonment for two months or a fine of $200. Through this decision the department has been enabled to fight the paregoric habit in rural districts. We find that laudanum and paregoric are sold in large quantities by druggists and grocers in rural and suburban localities.

The reports, which the law requires at present from physicians, manufacturers, wholesalers and druggists, include a record of all drugs received for local use or distribution, and all drugs sold within the state, with the amount, date, name and address of purchaser. These thousands of narcotic reports are carefully scrutinized, and when violations are found, department inspectors are immediately detailed on the case. This system of control by the department has resulted in reducing the amount of narcotics distributed by seventy-five per cent.

In no division of control has greater vigilance to be exercised than in that which grants licenses to manufacturers and druggists. Reputable manufacturers have from the beginning sent in carefully compiled reports which constitute valuable data for the department, and in all ways possible they have aided the department in the carrying out of the antinarcotic act. Since the department has exercised control over the manufacturers and druggists, there has been a great increase in the number of those seeking to enter the field of narcotic manufacture. These applications are subjected to rigid investigation by the department. How unfit the majority of applicants are to be trusted with such commercial manufacture is indicated by the fact that only ten per cent. of those who apply are granted licenses.

In a number of instances those applying have already been granted Federal licenses. In other instances applicants upon writing for licenses have given addresses that upon investigation are found do not exist. In one instance, an applicant who thus gave a fictitious address was finally arrested and found with $200,000 worth of illegally procured narcotics. He was tried and convicted. Some of those who apply for licenses are gangsters, and some former addicts. A common trick is to secure a store or a loft in a busy building, pay rent in advance, and paint the windows so heavily with green or black pigment as to render them opaque. No furniture is put into the office until a license is granted, indicating that they do not intend to deal in the manufacture of drugs generally, but merely to specialize on narcotics. If the license is not granted, the applicants disappear so that they cannot be traced.

There has been a great increase in the number of applicants for druggists' licenses, showing that the activities of the department have stimulated applications in this division. Great vigilance is exercised over drug stores. While the majority of druggists cooperate with the department, some of them violate different provisions of the law. These fill doctors' prescriptions which are illegally made out; others who cater to the narcotic trade have such a tremendous rush of business that they do not properly care for prescriptions. In one instance a drug store, suspected by the department of illegal practices, was raided, and thousands of prescriptions were found in the cellar, so that the State and Federal officials literally waded in them. It was necessary to secure a number of bags and to engage a truck to take these to headquarters. The druggists encouraged their addict customers to loiter around their shops, either in the place itself or on the adjacent corner. Drugs were the sole topic of conversation among these loiterers, who smoked incessantly. The department brought the matter to the attention of the druggists and requested them not to permit their addict customers to remain in the store or in the vicinity longer than to have their prescriptions filled, and they were to go home before administering it. The addicts were threatened with arrest if they continued to make public nuisances of themselves. Many druggists were warm in their expression of appreciation of the department's vigilance in this regard.

---

*Delivered before the Philadelphia County Medical Society on November 10, 1920.

THE PHYSICIAN.

An erroneous opinion in regard to the physician has been held by the public, that he is solely responsible for the spread of addiction. Intensive study of the narcotic situation shows unmistakably that in ninety per cent. of the cases the addict under thirty acquired the habit through bad association and home environment, and the middleaged and elderly become addicts through selfmedication. Experience with thousands of addicts at the clinic, through registration procedure, at hospitals and with hospital releases, demonstrates that the narcotic addict is a medical responsibility for ten days —during the withdrawal period—after which he becomes solely a sociological problem.

LEGITIMATE PRESCRIBING.

The only way the addict may obtain drugs legitimately is through the instrumentality of the physician, who may either administer or dispense them himself, or write a prescription for them. It is at once evident that a very important power is given to the physician and that a great deal depends on the use he makes of this power. Most physicians are exercising great care; others are careless in prescribing drugs, and some are known to be unscrupulous, using their professional license as middlemen in a nefarious practice in the enslavement of addicts. It is because of these conditions that the Department of Narcotic Drug Control has had to exercise great vigilance in administering the law. This is a very delicate problem, since the general purpose of the law is not to add to the burden of reputable physicians, but to check those whose activities are questionable.

MISUSE OF THE OFFICIAL BLANK.

A woman arrives in New York with letters from the physicians in her home city, in which it is stated that she has a painful facial disease. The woman comes under the notice of the department when no fewer than four physicians, no one of whom knew of the others prescribing, sent reports and requests concerning her to the department. It appears that when a physician, after prescribing, explains to the woman that she must come under the law and that he can treat her but once on an unofficial blank, she does not return to him, but applies to another doctor, who innocently prescribes for her and in turn appeals to the department in her behalf, not knowing that she is a peripatetic addict.

Here is an instance where a patient tried to take an unfair advantage of the unofficial blank and thus escape registration. Unfortunately for her, the physicians whom she approached were law abiding men, who refused to treat her the second time without a certificate, and reported her to the department.

Another case is that of a hospital orderly who was registered as an addict with the department, his dose being one grain a day. As his prescriptions ceased to come in, an investigation was made. It was found that the man had gone to a commercial prescribing doctor who knew him to be an addict and from him he received prescriptions for four grains on unofficial prescriptions.

The department has uncovered thousands of cases of the misuse of the unofficial blank. Such violations of the narcotic act have been so flagrant and difficult to unearth that a ruling to abolish the unofficial blank is the only possible method of control.

EXCESSIVE DOSES.

When I took office in April, 1919, prescriptions of from forty to ninety grains of morphine or heroine were frequent. The group of commercial narcotic prescribing doctors aggregated in their prescriptions in one month 1,760,000 grains of narcotic drugs. The department early adopted the policy of following up such prescriptions, and the pressure it brought to bear has resulted in great reductions in the amounts prescribed. It is now exceptional to find prescriptions calling for more than ten grains of morphine. Cocaine is restricted to a few grains a month, and heroine has been practically eliminated.

In May, 1919, there were in my district sixty-five commercial narcotic prescribing doctors. These physicians controlled the narcotic situation to a large extent. It was unfair that so small a group, composed mainly of foreigners, should throw discredit on the whole medical profession. No time was lost in bringing pressure to bear on this group. A striking example of the violation of the narcotic act was furnished by one of the group. This popular narcotic practitioner left the upper sash of the basement window lowered. Into this opening his hundreds of patients daily tossed their registration cards. These were gathered up by his wife and carried to the doctor. On the morning of his arrest he was found by the officers of the law, in bed, in an upper story, with the registration cards of forty-five of his patients, in which he was busily engaged writing prescriptions for addicts whom he did not see. It was the custom for his wife to return these cards to the patients. Thus he was enabled to secure a princely income with very little effort.

Previous to my taking office, one of these physicians prescribed in one month 68,282 grains of heroine, 54,097 grains of morphine, 30,280 grains of cocaine. This same physician after supervision by the department prescribed 18,000 grains of morphine in one month, no heroine and no cocaine. By November, 1920, the number of commercial prescribing doctors in my territory was reduced to four, having over twenty-five patients, the highest number prescribed for by any of the four being a hundred.

A startling instance of a doctor prescribing a grain a day for an infant shows a sinister phase of careless prescribing. This infant was habitually left on the sidewalk in a perambulator between 11 p. m. and 3 a. m. When the mother was questioned, she explained that she was obliged to leave the child on the street as she earned her living by cleaning saloons and drug stores after 11 p. m. She could not leave the infant at home because she asserted that it was an addict and she administered the drug to it at stated intervals. This she could not trust anyone else to do. As the weather was warm, the infant was more comfortable in the open air. I wish to emphasize that this infant received a grain a day on the prescription of a narcotic prescribing physician. When the infant was placed in a hospital under the observation of Dr. L. Emmet Holt, the child showed no withdrawal symptoms. This infant was being drugged on the supposition that it was an addict because its mother was an addict.

Another condition requiring control was the unexpected result of an order issued July 31, 1919, by the then commissioner of the Internal Revenue Department, Daniel C. Roper. This order to his subordinates stated that the vigorous enforcement of the Harrison law must be carried out in such a manner as not to produce unwarranted suffering on the part of the addicts. This was interpreted by the commercial prescribing doctors as license to issue emergency prescriptions.

An example of flagrant prescribing is furnished by one physician, who wrote eight hundred emergency prescriptions in one day. Another development of this relaxation of the law was a flooding of the department with demands for exemptions by the commercial group from the rules and regulations, until a total of eight thousand were received. This entailed careful investigations and medical examinations, with the result that only five hundred of the applicants were found to be entitled to exemptions.

Further study of the situation revealed that the addict was being supplied with drugs from many sources; from the prescriptions of physicians legitimately and also in illegal ways. The first step in the control of his drug supply was the establishment of a narcotic clinic. The department also ordered compulsory registration, appointing the commissioner of health, Dr. Royal S. Copeland, its agent. On July 14, 1919, registration went into effect under his supervision. On and after that date every addict was required to be registered. When he presented himself at the clinic, he was physically examined by a physician, after which he received a registration card which contained his photograph, his name, his address, his age, and his dose sheet. Each time the doctor prescribed for an addict, he was required to sign a designated blank space on the dose sheet for that day, as was also the apothecary when filling the prescription. It was hoped that the addict would not receive more than one prescription for that day because the next doctor or apothecary would see that the space on the calendar dose sheet for that day had already been signed, and therefore would not violate the interpretation of the United States Supreme Court's decision. Over 7,500 addicts were thus registered, which is undoubtedly much fewer than the total number of addicts in the city.

The dose sheets served to show, however, how commercial prescribing doctors took advantage of technicalities under the guise of the ambulatory treatment. They accepted at face value the claim of the addict as to the amount of drug he required, and wrote the figures in such a way as to make forging easy.

Apothecaries who were catering to this kind of trade winked at the violations. Counterfeit dose sheets soon made their appearance, and were forged as to the amount of drug allowed. The extent of the violations may be judged by the fact that the department has a collection of 1,500 counterfeit dose sheets, in which the same doctor prescribed for the same addict twice a day on each of two such dose sheets. The commercial prescribing group signed their names illegibly, often with a mere wave of the pen, making forging easy, and giving no ground for prosecuting the apothecary who accepted the prescription offered with such dose sheets. Again and again the department realized what a conspiracy ambulatory practice allowed.

Under this prevailing practice the addict is commonly treated by what is known as the ambulatory method, by which the patient agrees to submit, or pretends to submit, to the reduction of his dose gradually by a slight amount while going about his customary business, in the hope that eventually the dose will be so small as to enable the addict to abandon it altogether without serious discomfort.

Can such a method succeed? It has been shown that the craving for drugs is of the most pressing and insistent sort; and that enforced abstinence produces extreme agony. It has also been shown that he cannot be trusted with any considerable amount in his possession. Is it not contrary to all reason and experience, therefore, to expect success from a method by which the addict is asked to undergo with fortitude and selfcontrol one of the most critical stages in the cure of his habit?

Even those addicts who insist that they are determined to rid themselves of the habit, after they have had the usual dose, change in their mood, lose determination and relapse when their supply seems to be in danger. Many addicts have had the courage to begin treatment under the reduction method, and have placed themselves wholeheartedly under the care of an honest physician. For a brief time they have resisted temptation, and have held out against violation of their pledge to the doctor while the dose was being diminished by very slight amounts. But sooner or later, the dose seemed inadequate or reached too low a point; they felt great pain and complained of being ill. No restraint but their own feeble will, weakened by years of addiction, has stood as a barrier to their impulse to relieve their suffering and deceive the doctor. They have bought drugs "on the street" or have gone to another doctor for "treatment" thus doubling their dose. The physician soon gets an inkling of this condition, and it discourages his hopes of achieving a cure. The drug addict thus learns to deceive.

The consensus of opinion among all those who have given careful study to the problem of drug addiction condemns this method, as is brought out clearly in the report of Dr. E. Eliot Harris, chairman of the Special Committee on the Narcotic Situation in the United States, appointed by the American Medical Association. The large number of repeaters who went to the clinic and to penal institutions gave strong support to this view which condemns the ambulatory method of treatment. The clinic was organized for the humane purpose of saving the addict from the profiteering doctor and the profiteering druggist and to prepare him for hospitalization. Addicts received their medicine at wholesale prices and they had every attention. They came by thousands when they found that they could get the drug for very little money and without doctors' fees. The first day the clinic was opened, cocaine was dispensed, but it was stopped on the second day, no cocaine being again dispensed there. The chief drugs sold were heroine and morphine, ninety per cent. of the addicts who came to the clinic being heroine users, who acquired the habit through bad association. All classes attended the clinic—the underworld, the criminal, respectable men and women, including physicians, clergymen, nurses and actors. The addict was started on the maximum dose of fifteen grains, regardless of whether he had formerly received thirty or seventy grains (these being the average doses prescribed for thousands of addicts throughout the city). Thereafter the dose was regularly reduced in accordance with the decision of the United States Supreme Court. Demoralization set in and the addicts became discontented.

As the third step in control, a hospital at Riverside was opened and when the addicts reached the irreducible minimum, they were compelled either to go to the hospital or were refused further doses at the clinic, the monthly dose sheet being then denied them. At this period in the history of the clinic we lost sight of thousands of addicts. The number of prescriptions issued will give some idea of what the work entailed, some days over two thousand prescriptions being issued. As the dose became smaller, the demoralization grew. The constant reduction of the dose incensed the addict and he resorted to petty larceny—stole pocketbooks, fountain pens, any small saleable object that he could lay his hands upon. He also lied and forged in order to obtain additional drug.

The majority of the addicts who patronized the clinic were of the underworld type and the respectable men and women who were compelled to go there through poverty were soon demoralized, their addresses were secured and they were followed to their homes. Peddlers openly plied their trade in the clinic in spite of six supervising policemen. When one peddler more daring than the others was arrested, another immediately took his place. In the course of time the addicts were shut out of the lavatories and retiring rooms which had been assigned to them to selfadminister the drug, as they grossly abused these privileges. The addicts then resorted to an adjacent park where in the open air and before groups of school children, they applied the hypodermic needle and generally conducted themselves in an unseemly manner. The scenes became so scandalous that petitions were sent to the Governor of the State and to others calling for the suppression of these demoralizing daily exhibitions by the closing of the clinic.

Within a period of eleven months the clinic had run its course. It had failed as a clearing house for the hospital, had become a profitable market for peddlers, and the socalled reduction method failed to cure any addicts. It was only through the authority the department imposed upon them, supplemented by moral suasion, that even so few as 2,800 of the 7,700 registered addicts were induced to go to the hospital. The narcotic clinic stands out as an enormously expensive and colossal failure. The third step in attempted control was the hospital.

The experiment was made with a municipal hospital, where the treatment was scientific and skillful, which resulted in ideal conditions for the short-term hospital experiment. The full treatment there was for a period of six weeks only. Patients in all stages of physical condition, undernourished, drug saturated, highly nervous, or deadened by narcotics, were received. These were each subjected to a preliminary treatment suited to the needs of the individual.

Quoting Dr. Braunlich in charge of this municipal hospital: "The marked abstinence symptoms on withdrawal of the drug are selflimited to seventy-two hours. After the drug has been withdrawn and the addict has passed through the mild hyoscine treatment, he finds himself in the convalescent building. Although he is much weakened, he is able to be up and around, but because of his muscular weakness and his sleeplessness, he is at his worst as to his craving for the drug. This is the danger period for the addict and it is during this time that he needs the most careful watching and medication." At this hospital those in charge administered at this period hypnotics such as bromides, veronal, and chloral. Within another week the patient was sent from the convalescent ward to the dormitory building where he was given suitable work. He received no more medicine of any kind except for some intercurrent affection.

Among all convalescent addicts a peculiar state of mind exists, a craving for the drug which persists even after its withdrawal. The tendency of the mind is to revert to narcotics and this becomes more pronounced if the former addict knows how to get the drug or has hoped to get it. Dr. Braunlich states that if the patient has any hope of getting the drug during the six weeks' period of treatment, he will undoubtedly relapse into his old habit.

The addicts when discharged from the hospital showed an average increase of from twenty-five to forty pounds in weight. Peddlers and fellow addicts met the hospital discharges on the New York boat landing and tempted them with an offer of free drugs under the guise of good fellowship. Of those who withstood the first onslaught, a percentage succumbed when they returned to their old neighborhoods and met the boys and their former narcotic physicians. We have demonstrated that the municipal short term hospital, although administering a benign and effective cure, has been conceded by all those in charge as lacking in the scientific feature of classification. Criminals, defectives, the tuberculous, the moral and the immoral, and those whose only weakness was drug addiction, were accepted indiscriminately. This is a serious defect of the short term hospital and is largely responsible for the number who are buying drugs on the street.

When the department took office it found that the addicts were generally despised and without either officials or laymen to plead that they be treated humanely. It was assumed without basis of fact that the addict was a wilfully vicious creature who refused to abandon his habit although he could do so if he would. Acting upon this theory the courts, the police and the jail keepers treated him as a despicable creature who merited only severe treatment and this was usually accorded him. Even the court forms for voluntary commitments to hospitals were couched in punitive terms. The department has materially modified these hard conditions.

New York city was peculiar in its form of drug addiction, as over ninety per cent. of its drug users were addicted to heroine, the most baneful, the most powerful of habit forming drugs, and the most detrimental in its effect upon the user. It is cheap, because it demands neither lay out nor hypodermic syringe, and can be taken for some time without disturbing the health; it stops the craving without diminishing the working capacity to a degree which would prevent the earning of money to buy the drug. It is sniffed through the nose on a quill, and the addict can take heroine without fear of being detected or being interfered with. This drug has developed a distinct class with a certain amount of freemasonry and cooperation among themselves, which is necessary to make it easy for users to procure heroine and also to safeguard one another in the indulgence of a practice forbidden by law. The majority of the heroine users were young men whose easy sociability developed into gangs. In their leisure hours they flocked together in dance halls, pool rooms, roller skating halls, and movies. For some time the boys remain in good health and possess a fair degree of intelligence. Because of their youth they lack individual initiative, are imitative and easily led, and fall into the habit easily, the tragic part being, ignorantly. Once the habit is established, interest is lost in work. The addicts become late and irregular in their hours of work and finally they throw up their positions. Many are good workmen, but they only work long enough to procure money with which to buy the drug.

On March 6, 1920, the department instituted a moral drive against the prescribing of heroine. The cooperation of doctors and druggists was asked through every possible means of communication, they being requested to substitute morphine for heroine all along the line. The response was cordial and prompt, and within forty-eight hours from the time the signal was given to the first doctor, heroine was taboo in the Greater City of New York. I am in receipt of many letters from both physicians and addicts warmly thanking me for the order. The improvement reported is a lessening of nervousness, improvement in appetite, and restful sleep, an experience many of them had not enjoyed for many months.

Dr. B. reports: "It gives me pleasure to inform you that your ruling eliminating heroine has been a blessing in disguise to many addicts. The first few days were a nightmare to both the addict and the physician; however, as soon as the systems of the addicts adapted themselves to the new drug (morphine) very few complained, in fact at least ten openly expressed their happiness at the change. Do not let anyone tell you that an addict cannot let heroine alone, and don't let any one tell you that he will die. I think you made a glorious move in doing what you did (attack on heroine) March 8, 1920."

Now it is rare for the department to receive a physician's prescription calling for even the smallest amount of heroine. As you probably know, heroine is being sent into China to a considerable extent, large amounts being exported from this country. The heroine habit there is taking the place of the far less dangerous vice of opium.

It is not always the perversion of the social instincts alone that is responsible for the creation of new addicts. Among those interested in such gangs are the illicit peddler, the smuggler, and the trafficker, whose commercial motives result in the enslavement of new victims. In its most vicious phases, the power of dispensing the much prized drug is one of the surest ways for a "Fagin" to hold his pupils or a white slaver to maintain control over his prey.

Peddlers, like drug addiction, flourish in centres of large or congested population. True to the name, the peddler has no store or permanent place where he carries on his trade. He may take up his stand at a certain street corner or in the middle of a block for a day, possibly a week, after which he will move to a position a mile or two away in the same city, or even move to another city. The smuggled drug is not, however, the peddler's sole source of supply. He will often finance the drug addict. As an illustration, the addict may be too poor to pay for a doctor's prescription, or to pay the druggist for filling it. The peddler will give him the necessary money, it being agreed between them that when the addict procures the drug he will divide it with the peddler. A peddler who thus finances from twenty to fifty drug addicts will obtain not only a fair supply of the drug, but reap a material profit on his initial outlay of money, for he sells the drug at a rate in excess of that charged by the druggist, and he adulterates it in order to make it go further, the most used substance for adulteration being sugar of milk, or some other article sufficiently white to resemble the drug. I have known of instances where the addict who had paid at the rate of a dollar a grain would get six tenths of a grain, and many more instances where he would be sold nothing but pure sugar of milk. I realize that this will naturally cause the question to be asked, Why then does the addict buy from the peddler? There are three answers: The hesitation of having his addiction known to the authorities, as it would be if treated by a doctor or at a clinic; the inclination to satisfy his craving by illegitimate means, and the fear of having his dose reduced by the doctor or the clinic.

The speedy elimination of the narcotic peddler is the object of a plan I submitted to Commissioner Enright, of the New York Police Department, a plan which he accepted. It called for the creation of a special narcotic corps with a criminologist, who is also a physician, at the head. This corps supplements the Federal, State and Municipal narcotic agents and its special duties will be the detection and arrest of illicit peddlers. The physician whom I suggested as head of the corps had been for more than a year in charge of the department's clinic, where by special orders he was permitted to study the conditions and histories of thousands of addicts, also the policies and future plans of the department. This cooperation between the State narcotic department and the municipal police has resulted in a vigorous campaign against the peddler. I have also enlisted the cooperation of the State constabulary, the chairman of which is Dr. Lewis Rutherford B. Morris, for the outlying cities and towns of my district. With these aggressive bodies continually on their trail, the peddlers will soon realize that New York is no longer an open town.

My appeal is now in behalf of 22,000 registered narcotic addicts, together with unnumbered thousands in this State, who are neglected and shunned by the public. The following facts are pregnant with meaning:

1. The addict cannot free himself.
2. He needs institutional custodial care to relieve him permanently of his habit and to rebuild him spiritually, mentally, and physically, so that he can be returned to society an asset.

There is no gainsaying these statements. What provision do the State and the city make to meet adequately these desperate needs? New York city closes its hospitals—Bellevue, Metropolitan, Kings County, and the remaining hospital, Riverside, is being run on a three weeks' schedule instead of one of six weeks as heretofore. Its present capacity is from fifteen to twenty-five, formerly a capacity for 800. The patients are now released when they are psychologically and physically unprepared to be sent back to their old environment and its temptations. The results of this short term hospital emphasize the fact that such limited treatment is a waste of time and money.

The United States Government has fully recognized that addiction is a country wide problem, but it has only emphasized the punitive attributes of the Harrison antinarcotic law rigidly enforced. This is the crux of the whole situation. Due to these one sided measures of attack, this problem has remained unsolved because the Federal Government has thus far failed to recognize that the humane attitude and the law enforcement attitude are antagonistic and nullify each other unless united, as they should be in a great State institution for the proper custody, care and cure of the addict. The same argument holds good for the several States.

The initial step in this combination of effort is the establishment of institutions where the addict can be properly cared for on the institutional colony plan, which admits of segregation of the several classes and employment in the arts and crafts and farming. Such institutions should be under medical direction.

Under a plan for commitment of drug addicts, the State institutions can be used for the permanent reclamation of these unfortunates. After the addict is taken off the drug, he will be placed under the observation of experts for classification.

Class I: Those who suffer from a disease or ailment requiring the use of narcotic drugs.

Class II: Addicts are those who use narcotic drugs for the comfort they afford and solely by reason of an acquired habit.

Class II may be subdivided into: a, correctional; b, mental defectives; c, social misfits; d, fortuitous (occurring by chance).

For those who are found to be true defectives, the State institution will not be the proper place, as institutions are already in existence for the care of mental defectives, where they are segregated and made as useful as possible. Among the correctional cases there will probably be worked out certain subclasses. Those who are true criminals will be sent to other institutions. There will also be borderline mental cases which can be industrially reclaimed and returned to the world, if kept under the supervision of a wise probation system. The true cases for this colony life will be found among the social misfits, who will find here their great chance to make the start in life that they never had, under such direction as will assist them to find their proper place. Such a life will also be of the greatest benefit to those who are normal except for their drug addiction.

The present is full of hope because we have found, upon investigation and experiment, that the drug addiction problem is soluble. To begin with, the average age of the addicts is only twenty-four years. We have brought the general public to a realization of the extent and the menace of drug addiction which it now knows transcends in seriousness the much discussed alcoholism, and this awakened public opinion can be relied upon in the future to support all worthy measures designed to relieve this country of drug addiction. In spite of the failures of the clinic and the short term hospital, they have served the useful purpose of pointing the way to the only possible solution of drug addiction, that is, the State narcotic institution on the colony plan, for the rehabilitation of the addict, physically, mentally, and morally. The department is grateful to the members of the medical profession for the cooperation extended in the past, and it looks forward to their cooperation and help in the future.

Lithiasis of the Urinary Organs.—I. S. Kolb (*Urologic and Cutaneous Review,* May, 1920) concludes that there is no surgical procedure fraught with more serious sequelæ than litholapaxy. It has its limited indications, but is more properly controlled by contraindications. These latter are very large calculi, very hard calculi, and infected bladders. Small vesical stones in the absence of a marked cystitis should be removed by crushing, with a proviso that the operator be experienced and skillful in the manipulation of the lithotrite; otherwise it is far better for the patient to have a suprapubic cystotomy.

MEDICAL SOCIAL SERVICE IN DISPENSARIES.*

By the Public Health Committee of the New York Academy of Medicine.

(Concluded from page 69.)

IX. AGENCIES REFERRING PATIENTS TO SOCIAL SERVICE DEPARTMENTS.

Of the 675 cases studied, 170 came to the several social service departments referred there by clinic doctors; 201 were sent from within the various institutions from sources other than clinic doctors, and of these, forty-four, or 6.5 per cent. of the entire group of new cases, were picked by the social workers themselves; 175 came to the social service through outside agencies. Of this division, schools, settlements and relief societies referred eighty-one, or 12 per cent. of all cases; private physicians referred twenty-four, or 3.6 per cent. of all cases, while thirty-seven, or 5.5 per cent., came by personal application to the attention of the social service departments. For 129, or over 19 per cent. of the patients, the source of the original reference was not designated. The large number of cases regarding which no information is available as to their initial direction indicates that the entries in the records are not complete.

The clinic grouping of patients referred to the social service departments shows that 22.7 per cent. were under care in the children's clinics, 22.2 per cent. in the tuberculosis clinics, 11.4 per cent. in the cardiac clinics, 7.4 per cent. in the general medical clinics, over five per cent. in the gynecological clinics, and practically the same percentage in the poliomyelitis clinics; twenty-two per cent. were distributed among the other departments of the institutions, and the clinic connection for the remaining 4.1 per cent. of cases could not be ascertained from the records.

X. PURPOSES FOR WHICH PATIENTS WERE SENT TO THE SOCIAL SERVICE DEPARTMENTS.

An effort was made to obtain information from the records as to the reasons and purposes for referring patients to social service departments, in order to determine what the functions of social service are considered to be by those who refer the cases, and by reason of such reference accordingly become. We find that 52.7 per cent. of all the cases are referred for what may be broadly termed medical aid in the form of clinical examinations (when cases are referred from outside agencies), for hospital, sanatorium or convalescent care, for special treatment, for nursing, or for recreation and rest. Eleven and one tenth per cent. were referred for relief of one kind or another; 7.6 per cent. were referred for instruction with regard to the condition of the patient, the mode of life, or the care of children; 7.9 per cent. were referred for an investigation, either with regard to the home situation or the financial status of the patient, or with regard to the occupation. Only 0.9 per cent. were referred to have suitable employment found for them, 2.2 per cent. for family readjustment to render treatment possible, 9.4 per cent. for general supervision, and in 8.2 per cent. of the cases reasons were not stated.

The greatest variety in the social service activities is observed in application to patients of the pediatric, tuberculosis and cardiac clinics. These three departments also show the largest numbers of social service cases. Taking the group of 356 patients referred for medical aid, we find that 32.4 per cent. of them were referred for a clinic examination, over half being in the tuberculosis department; twelve per cent. were in need of hospital care; 13.7 per cent. needed convalescent care; eight per cent. were in need of special treatment, and twenty-two per cent. needed stimulation in order to make them come back to the dispensary, the bulk being children in the pediatric, poliomyelitis and cardiac clinics. A small number needed home nursing, and a few patients were referred to the social service departments in order that examination in other clinics might be obtained or that opportunities for rest or recreation might be provided.

Among the seventy-five patients referred for financial aid, 54.6 per cent. were in need of apparatus for special treatment; 6.6 per cent. were in need of funds to obtain the special diet prescribed, and 38.6 per cent. needed general relief, belonging economically to the substandard group. In fifty-one cases referred for instruction, 23.5 per cent. needed explanation of their condition, 33.3 per cent. instruction as to diet and general hygiene, and 43.1 per cent. education in the care of children. Among the group designated as "referred for investigation" in thirty-eight instances was the home situation specified as needing special attention. The other fifteen cases were referred for investigation of financial status to determine whether the patients had claims on dispensary aid, all of them, however, belonging to one institution where specialties are treated.

To ascertain how clearly the cases were understood by persons referring them, a table was prepared comparing the purposes for referring cases with the social service problem as it developed after investigation had been made. Of the 356 cases referred for medical care, in only 217, or about sixty-one per cent., was medical care found to be the chief problem. Of the remaining thirty-nine per cent. of the cases, thirty-two per cent. needed home instruction, 1.9 per cent. needed family readjustment, 0.8 per cent. needed employment, and 4.3 per cent. needed financial assistance.

Similarly, among the seventy-five patients referred for financial assistance, fifty-four or seventy-two per cent. required such help; 14.7 per cent. needed medical aid, 2.7 per cent. needed employment, 1.3 per cent. needed family readjustment, eight per cent. required home instruction, and investigation showed that in 1.3 per cent. of the cases outside assistance was not desirable.

Among the patients referred for educational purposes, 66.6 per cent. or thirty-four of the fifty-one required that as their main aid. The remaining thirty-three per cent. divided itself as follows: 5.9

---

*This constitutes a part of the report on the Dispensary Situation in New York City by the Public Health Committee of the New York Academy of Medicine, of which Dr. Charles L. Dana is chairman, Dr. James Alexander Miller is secretary, and E. H. Lewinski-Corwin, Ph. D., is executive secretary.

per cent., financial help; 13.7 per cent., hospital care; 3.9 per cent., clinic care; two per cent., employment; 3.9 per cent., family readjustment, and in 3.9 per cent. investigation showed no problem needing social care. From this it can be seen that the workers freely change the plan of care after investigation has shown the case to be different than as at first supposed. In this respect medical social work differs from home nursing. In the latter, the nurse follows medical directions and is not free to change the procedure without the sanction of the doctor, while in the medical social work the person referring the case leaves the plan of action entirely to the judgment of the worker.

XI. SELECTION OF PATIENT.

The discussion of the achievements and failures of medical social work suggests the question as to the point in dispensary routine at which the social service department should begin to function. Should it wait until the patient has made actual contact with the clinic physician, or should it be the first to receive him? With few exceptions the usual practice is for the patient to come to the attention of the social service department only after he has passed through the clinic, and the facts about his disease have been developed and medical treatment prescribed. The first contact of the patient is with the registrar, who may or may not be an agreeable person. The patient then proceeds in his turn to the waiting room, where he may wait as long as an hour or more. Then his turn comes to go into the clinic. There he is interrogated rapidly, his examination made and treatment given or prescribed as quickly as possible, and he goes out, probably without having had a real opportunity to become adjusted to an unusual situation.

It is generally recognized that one of the most important elements of successful functioning of the dispensary is the establishment of proper relations with the patient at the outset by giving him a proper understanding of the dispensary's responsibility to him and his responsibility to the dispensary, and that this could properly come within the scope of the social service department in the case of all new admissions. A great deal of the now wasted effort on the part of the physicians and the loss of time and energy on the part of patients could be obviated by humanizing the initial contact.

In one of the large special institutions of New York, which has not a full fledged social service department as yet, the experiment has been tried out with a corps of visiting nurses and several volunteers whose duty it is to interview patients after they have registered. They take all the preliminary history and the patient is given an opportunity to state his circumstances. All of this occurs in a room sufficiently large to obviate the unpleasantness of telling one's story within the hearing of fellow patients. Not only does this result in securing better histories and in obtaining an immediate understanding of the patient, but it permits the patient to become adjusted to the dispensary easily and gradually. Anyone who has observed the smoothness with which this dispensary operates cannot fail to appreciate the importance of this method.

The financial information concerning the patient called for by the representation card and the social facts of the medical history could be elicited to advantage by workers of the social service department if arrangement were made to have every patient pass first through the admission office of the department. This information would furnish the physicians with the important facts concerning each patient and afford to the social service department an opportunity of gauging the social problem of the dispensary in its entirety, and to select for its endeavor such cases as most need it or would be most likely to profit by its assistance rather than to leave entirely to the preoccupied physicians the designation of cases needing investigation or guidance. As has been shown above, physicians take a markedly differing degree of interest in social service work. Some refer many patients, others very few or none. It is in justice to the patients that a degree of freedom should be left to the social service departments as to the selection of cases, and also in justice to the department itself. With a given personnel and a given amount of funds only a certain amount of work can be done effectively. As to that the department itself is the best judge.

XII. RELATION OF SOCIAL SERVICE DEPARTMENT TO SPECIAL CLINIC SERVICES.

The question of assignment of social workers to special clinics is another important consideration. Because of their magnitude, or because of the particular problems involved, certain departments, such as tuberculosis, venereal diseases, or pediatrics, require the exclusive services of social workers. In the determination of the assignment of social workers, however, more is involved than the quantity of social service work needed in an individual clinic.

If the dispensary is to be regarded as a training ground for social workers, then the necessities of such a training course must also be taken into consideration and an opportunity should be afforded for a working acquaintance with all fields of dispensary work in which social service has proved to be a most important factor. The determination of such fields should not be based, as is often done, on the special interest or special demands of the clinic physician. When a physician has an appreciation of or interest in social work he may, and often does, make demands upon the social service department far in excess of its capacity; if he is not interested in social work, even though his clinic may offer a very fertile field for it, he may make no demands upon the social service department.

Determination of special clinic needs should be based upon a comprehensive survey of the entire field rather than upon the surface indications of the demands of clinic physicians, and such a survey of the entire field is quite possible when the social service department has the initial contact with the patient, as has been suggested.

In the social service departments studied, the tendency to assign special workers to certain clinics is marked, for in thirteen of the fifteen dispensaries in which children's clinics are maintained, social service workers were found. In all of the dispensaries having tuberculosis clinics, social service workers are stationed in the clinics. Four of the five dispensaries having cardiac clinics depend on the assistance of a special social worker. In two institutions special workers have charge of the poliomyelitis work, and two general outpatient departments have special prenatal workers. One of the institutions has a worker devoting her time to a vaginitis class. These workers are usually expected to help in the medical treatment as well as to direct the social care of the patient.

XIII. A SOCIAL SERVICE CLEARING HOUSE.

Few dispensaries limit their services to patients drawn from a definite territory. It is well nigh impossible to do so for a great many reasons, one being the shifting of the patients. To deny a patient admission to a dispensary which he had formerly attended simply because he had moved to a different section of the city is at times difficult; but unquestionably there is a great deal of time lost by social service departments in following up patients who live at some distance from the dispensary.

The Maternity Centre Association established several years ago, which has as its object the development of standard equipment, practice and records in the maternity clinics of the city, as well as the development of an adequate centrally supervised home visiting service, offers a suggestion which may be of value particularly to the social service departments of dispensaries. Provided standard methods and record forms could be adopted by dispensary social service departments, such a central clearing house for social service work could be extremely valuable for the dispensaries in a given large district in which there are several dispensaries, if not for the city as a whole. The patient who is remote from a particular dispensary could very readily be referred to the attention of a social service department near his home. Reports from one social service department to another could readily be exchanged through this central clearing house, or referred directly from one department to another, but the chief object of the clearing house would be to provide the patient with social service aid quickly and economically, and in accordance with the demands of medical treatment in the dispensary where he receives attention.

It is suggested that such an experiment, although fraught with difficulties, would be at least worth trying. A number of hospital social service departments in a given area might pool their social service work and cooperate with other outside agencies interested in the social service problem. Central control could be established under a competent director for the entire district, in headquarters conveniently located within the district. All hospital and dispensary social service workers as well as workers from outside agencies would be placed under the control of this district director, and all demands for social service would pass through such a director's hands, assignments for followup being made as required. Reports of work done should be returned to the office of the director and, when approved, transmitted to the proper institution.

LONDON LETTER.

(From our own correspondent.)

The Ministry of Health Bill.

London, *December 21, 1920.*

On November 5th Dr. Addison, the Minister of Health, moved the second reading of the Ministry of Health Bill. Referring to the treatment of mental disorders, he pointed out that during the war a system had been set up whereby men suffering from shell shock and affections of that kind, who were mentally disordered for a short period, had received mental hospital treatment, so that they never became classed as lunatics, and thereby escaped any disabilities which their mental state might have brought upon them. The experience of the war was clearly one of which use ought to be made, and provision was made in Clause 10 of the bill for the continuance of this form of treatment, under very stringent safeguards for all cases of this class. The bill provided that persons so treated must be suffering from mental disorder incipient in character and of recent origin. Treatment in respect of any individual case would be limited to six months. It was necessary to erect all possible safeguards so as to prevent any scandals, such as the detention of people against their will or anything of that kind. Some said the safeguards were too stringent, but these points could be raised in committee. The best course was to have a successful experiment on a small scale without any scandals and difficulties.

The minister now came to the proposal in the bill which might involve an increased burden on the rates. None of these he had so far discussed would do so. The question of assisting the voluntary hospitals from the rates had aroused much criticism. He had seen the headline "Hospitals on the Rates." That was not the proposal of the bill. It was obvious that at no time of our history, and certainly not up to the time of the experience of the war, was it wise or practicable to ignore a real and earnest public necessity. Nothing could be more shortsighted. The fact was that up and down the country the accommodation in voluntary hospitals was unfortunately insufficient to meet public needs. He thought everyone would agree that anyone who suggested at the present time, if by any means it could be avoided, that the voluntary hospitals should come upon the rates, would be either seriously irresponsible or worse.

The facts of the case were these: With the assistance of the officers of the Ministry of Health and those of the Red Cross, the financial position of the hospitals for some years past was examined, that is, of the voluntary hospitals. It appears that during the five years 1913-18 there was a deficit on the provincial hospitals in respect of excessive expenditure over income of £1,300,000. So far as London voluntary hospitals are concerned, the deficit in round figures amounted to £900,000. During this time these hospitals received a number of free legacies not earmarked for particular beds and so on. He therefore thinks it is quite fair to ask the hospitals in the present emergency to see that these free legacies are used to relieve ordinary expenditure. If the free legacies of both London and provincial hospitals were taken into account they would balance the expenditure over the five years mentioned. Unfortunately, however, some of the voluntary hospitals were more fortunate than others. With the increased cost of food, wages, maintenance, and so on, unfortunately the expenditure falling on voluntary hospitals had risen much more than the income. There the discrepancy between the two was greater than it had been.

Again, it had to be remembered that many of those who had been accustomed to subscribe to the voluntary hospitals had been very badly hit by the war. For that reason, and because of taxation, they had found it exceedingly difficult to maintain their contributions and still less to increase them. The class which was colloquially known as the middle rich did not seem yet to have learned to subscribe to voluntary hospitals in any extensive way. Accordingly, the cooperation of the King Edward Hospital Fund was sought, and those in charge of that fund had set aside out of their accumulated reserve a sum of £250,000 to assist the London hospitals. The King Edward Hospital Fund being limited in its operations to London, negotiations with the National Relief Fund took place, and that fund had set aside the magnificent sum of £700,000 to help the voluntary hospitals.

There was a proposal in Clause 2 of the bill which enabled local authorities, if they so desired, to make voluntary contributions to hospitals, but in this there was nothing new. So far as the voluntary hospitals were concerned, they were not affected, except that an authority might make a voluntary contribution. But the pressure on the hospital accommodation of the country could not in any case be met by the efforts of the voluntary hospitals. There were in the country 45,000 beds in general and special hospitals, mostly maintained by subscriptions, but there were 94,000 general hospital beds under the poor law maintained out of the rates. Thirty thousand poor law beds were empty, while voluntary hospitals were crowded, and had enormous waiting lists; hospitals maintained out of the rates had a large number of empty beds. He suggested that some practical scheme should be devised to make use of good bed accommodation where it existed. There were two sets of objections, the professional and that of the ratepayer.

The hospital system is in a state of chaos. Practically every institution, whether endowed or not, is begging for money to carry on, while the directors of some, notably of the London hospital in the East End of the metropolis, state unreservedly that unless large amounts are quickly forthcoming their doors must be closed or, at least, a part of the institution cannot continue its beneficent or rather essential work. All are agreed that nationalization or even municipalization of hospitals is undesirable and the majority wish for a continuation of the voluntary system. But if sufficient funds are not forthcoming, how is such a course possible? The Minister of Health states that the King Edward Hospital Fund has given $1,250,000 and that the National Relief Fund has donated $3,500,000 which will tide the voluntary hospitals over their immediate difficulties.

After all, this is merely tinkering with the problem and does not reach the root. Sir George Newman in his masterly work *The Outlines of Preventive Medicine* points out that the solution does not lie in collecting money alone but in a thorough reorganization of the entire hospital system of Great Britain. However, while this statement is absolutely true, what body is going to undertake this reorganization and unification? The Ministry of Health is unable to do so at the present time. This department is choked by superabundance of serious health problems. It has *nolens volens,* to use an American expression, "bitten off more than it can chew." In the meantime the hospitals are going from bad to worse. The voluntary system is imbedded in the hearts of the British public. Its traditions are magnificent and if it could be adequately supported it might be for the best for all concerned to maintain the system. There are many who say that if those who ought to contribute to the support of the hospitals according to their means thus contributed all would be well. Yet people cannot be pestered into giving, however subtle and convincing the propaganda may be. The newly rich, especially the individuals who have made fortunes out of the war, no doubt, as Dr. Addison said in the House of Commons, have acquired the reputation of expending large sums in ostentatious display but have not acquired the habit of giving to charity. It is to be hoped that their duties and responsibilities, so far as charity is concerned, may soon be impressed upon them. The working classes who now earn three, four or five times more money than they earned before the war and who receive free treatment give with a niggardly hand to these institutions from which they receive the most benefit.

Is there then a way out of the difficulty which will avoid nationalization or municipalization and placing more heavy burdens on the already overburdened ratepayers? There must be and one mode has been suggested by some, namely, to introduce the pay system or partial pay system. Let everyone pay according to his or her means and while this may not be a complete solution, it appears that it will be going a long way in this direction. The working classes can now afford to pay and, in fact, are in a better position to do so than the middle classes who are mulcted in rates to an almost unbelievable extent. It seems that the general introduction of a pay system would relieve the immediate necessities of the hospitals, would do away with a great deal of abuse of these institutions by those who can afford to pay, would provide efficient medical and surgical treatment to the poorer ratepayers and would tend to self respect and independence on the part of all who seek the services of hospitals. The Ministry of Health cannot do everything and with regard to the hospitals can only give advice and assist to a limited extent. In the last resort the salvation of the people in health as in other directions, rests largely with the people themselves. However, the Ministry of Health and the medical profession generally can and should point the way.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, JANUARY 15, 1921.

MEDICAL RESEARCH.

Scientific research and perhaps medical research especially are greatly exercising the minds of members of the medical profession and citizens in general. The man in the street has a very hazy idea of what medical research is and what it signifies and if he were told that it was the foundation stone of preventive medicine and, correctly interpreted and intelligently applied, led to health, he would wonder what kind of nonsense he was being told. The inner significance of medical research is fully comprehended by the few only. The public require education on the subject before the value of medical research will be evident to the majority, and therefore it seems essential that such education should be freely proffered. If there is one man of the English speaking world who is conscious of the value of this form of research it is Sir Almroth Wright, and consequently when he discourses on the subject one may rely upon hearing something well worth while.

On November 11, 1920, Sir Almroth Wright was presented with the gold medal of the Royal Society of Medicine and took the occasion to make comments upon medical research and the conditions indispensable to the achievement of new knowledge. He said in part that the compilation of details was within the power of every intellect; the great need in medicine at present was for more genetic generalizations. For this a special type of intellect was needed, and even then such generalizations could only be arrived at slowly and as a result of much study. Having arrived at a generalization the next necessary step was to verify it. Four out of every five generalizations believed and accepted by men were wrong, and nine out of ten believed by women. The scientific worker was the man with a scientific imagination who afterward knew how to verify. The man who made a genetic suggestion did not advance things unless he devised a means of testing it and had the skill to carry it out. Experiment was the intellectual machinery for doing this. The layman or quack could not do it. In short, the man successful in medical research must in the first instance possess imagination; the painstaking plodder is unable to think out anything original.

But, in addition, the imaginative man engaged in scientific research, medical or otherwise, should be so trained that he can ascertain the value of his ideas by the acid test of experiment. Sir Almroth argued that, because the laboratory worker was the sole person who could test his results directly by experiment, he was in a better position than anyone else, even the physician, who had to allow time to elapse in order to learn results. From this reasoning he drew several important conclusions. If a hospital had no laboratory men at hand to ascertain the effects of its treatment, advance could scarcely be expected. Attached to every hospital there should be a laboratory research staff, whose function it should be to test new things, to make generalizations, and to extend knowledge by subsequent verification.

Stress was laid by the speaker on the need for fully trained men to do laboratory work. Laboratories not attached to hospitals did not turn out good work, as the stimulus of fresh material from hospitals was lacking. He insisted that men who entered upon a career of research should have a permanent job, with an increasing salary. Lastly, he urged that the only person who could direct men to do useful research was one who knew the necessary methods from having himself been engaged in such work. A surgeon or physician who had not had this training had no rightful place on the directing staff. The higher workers of the laboratory staff should be given a due share or voice in directing the policy. Assuredly the president of a research organization should not be a busy politician or any other layman; he should be a person eminent in science and whose energies were engaged in connection with science.

There is little to cavil at in the exposition of what is required as to personnel and organization of a medical research staff. Perhaps too great emphasis is laid on the rôle of the laboratory worker and too little on the part played by the clinician. Surely laboratory tests by experiment are sometimes fallacious and, at any rate, clinical tests, although they may be slow, are reliable. Of course, the ideal plan is for the clinician and laboratory man to work in harmonic conjunction and it certainly is essential, if the obscure features of disease are to be traced to their innermost lairs, that a well equipped, well staffed laboratory should be attached to every large hospital. It is also obvious that without imagination the research worker will never go far, and, of course, he should be thoroughly trained.

No man should be a director of a laboratory unless he knows his work from alpha to omega, and an active politician should be barred from holding any such position. The public should be educated to appreciate the benefits to be derived from medical research work, and the work itself should be carried on in the manner sketched by Sir Almroth Wright. If this comes to pass, and there is no reason why it should not, the results of medical research work, the discovery of the causes of disease, may ultimately banish the greater part of the diseases which now oppress and handicap the inhabitants of the world. However, if this end is to be reached medical research must not be hampered for lack of funds, and the community at large must cooperate to aid its advancement.

WHAT EXERCISE IS BEST

"You need more exercise!" How often the advice is given without specification as to how, when, where or under what conditions the exercise is to be taken. And what, after all, do we mean by exercise and what exercise is of most benefit?

By exercise, unspecified, we usually have in mind the active, conscious, use of the voluntary muscles, and often our thought goes no farther. These cannot be made to work, however, without exercise of the nervous machinery, and, accompanying and following the activity of the voluntary machinery, there are sundry changes (exercise) of the involuntary nervous, muscular and glandular apparatus. In fact, voluntary muscular exercise means an increased activity of all structures of the body.

But the mere purposeless waving of arms, kicking of legs or even so complicated a performance as walking, after it can be done without conscious effort, does not mean that the person is receiving the maximum of benefit. It has even been asserted that routine exercise done in a perfunctory fashion does more harm than good. It is especially the mental side of the human being that must be taken into account in exercise for health, for, unfortunately, while the lower levels of the nervous mechanism may be engaged in directing muscular movements, the higher ones may be at work in such fashion as to counteract the good results of the muscular movements. The patient is early fatigued and wonders why his benefit is so slight.

The degree of mental occupation thus becomes a test of the value of exercise for purposes of health. Mental work is always accompanied by some, and often by great, activity of the other mechanisms of the body, which does not show on the surface. The driving of a motor car, which, if not mental, is accompanied by continuous coordinate use of muscles all over the body, and with a fairly constant attention of the mental machine. Boerhaave understood this vital principle for beneficial exercise when he advised the obese gentleman from Amsterdam, that, if he wished to be treated by him, he must come to Leyden on foot. The wonder and curiosity aroused by such an order which must have filled the mind of the rich patient when it was not absorbed in the passing scenery, made it possible for him to carry his unwieldy body the distance, and, by the time he had completed his journey, the cure was well on the way to accomplishment and was lasting. A wise American physician was in the habit of advising his clients with little to do, to purchase a dog and to take daily outings in its company. The dog was of course for the purpose of objective mental absorption.

The work of teaching, primarily nervous exercise, is accompanied by a vigorous activity of the whole machine. The muscles become tense, the heart beat quickens, and the blood pressure rises. When the pupils respond in kind and there is no distraction from the work in hand teaching can hardly be other than healthful. Unfortunately these conditions are rarely present, two things must be attended to at once, introspection is mixed with circumspection, and the former, as worry, is carried over for constant nerve leakage in after school hours. Under such conditions the exercise of teaching becomes wearisome, wearing and anything but beneficial, and the only help in the case is to seek other occupation. Exercise to be most beneficial must, then, be something more than mere calisthenics—something more essential than mere muscular contractions and relaxations but should be some occupation, it matters little what, in which the machine works as a whole and with self forgetfulness. It is the mental side which must be looked to first in prescribing exercise, the mere muscular performance is of minor importance, save that the latter should be fitted to the strength and endurance of the exerciser.

HEMATEMESIS AND VARICOSE VEINS OF THE ESOPHAGUS.

Hematemesis is one of the principal symptoms in certain diseases of the esophagus, stomach and duodenum, gastric ulcer being probably the most frequent cause of the vomiting of blood. In ulcer of the stomach this is preceded by nausea, while in diseases of the esophagus the blood is vomited without any preceding malaise. Duodenal ulcer may give rise to hematemesis, but it is less common in this affection than melena. During the evolution of hepatic cirrhosis blood may be vomited, and this is usually attributed to varicose veins of the esophagus, but even when abundant and repeated the hematemesis may take place without the existence of varicose veins of the esophagus, or if these do exist, without ulceration. On the other hand, varicose veins of the esophagus may develop without cirrhosis of the liver. Lastly, in hemophilia very severe vomiting of blood may occur.

Hematemesis offers two distinct types, according to whether the blood has been retained in the stomach or is expelled at once. In the latter case it is fluid or coagulated, but easily recognized as blood. When it has been retained in the stomach it undergoes digestive changes, and is vomited in the form of small, blackish lumps. The black transformation of blood in the stomach depends upon two factors, namely, the amount of blood and the length of time it has been in contact with the gastric juice. A severe hematemesis gives rise to all the symptoms met with in profuse hemorrhage, but slight, repeated hematemesis may lead to anemia.

The esophagus has a rich supply of veins, arteries and lymphatics, and is innervated by the pneumogastric and a few branches of the sympathetic. The venous network receives its blood from the portal vein, which from its anastomoses communicates with the caval system. From the viewpoint of the etiology of esophageal varices, some observers adopt the same classification as for hemorrhoids, namely, those having a mechanical cause, and secondly, the constitutional or idiopathic type. In the first class, the process may be due to temporary compression, while permanent compression results from diseases of the portal vein, or hepatic processes, particularly cirrhosis, dilatation of the stomach, and lastly, diseases of the spleen and heart, especially lesions of the mitral valves, and esophagitis. Esophagitis, whether acute or chronic, is more prone to occur at the upper portion of the tube, the lower and middle portions being less commonly involved. Ulcers develop and may occasionally give rise to purulent foci, the former often contributing to rupture of the varicose veins present.

Varicose veins of the idiopathic type are due to rather complex causes, such as climate or plethora, while heredity plays a considerable part in the etiology. When the cause of the varix is temporary, as in pregnancy, phenomena of congestion appear, but are usually mild, and after labor has taken place the process disappears. When the cause is a permanent one, the congestion is likewise, although a spontaneous cure is not impossible. On the other hand, idiopathic varix is marked by intense congestive phenomena, with or without hemorrhage, and, if this is repeated frequently, anemia and digestive and cardiovascular disturbances occur.

The outcome of the process may be recovery, but usually it becomes chronic, and the evolution is subordinated to the occurrence of complications. Death may occur from hemorrhage or some intercurrent affection.

PHYSICIAN AUTHORS: DR. JAMES BALL NAYLOR.

One of President-elect Harding's closest personal friends is Dr. James Ball Naylor, of Malta, Ohio, who, in addition to being a practising physician, also has been for the past seven years a special editorial writer on the staff of Senator Harding's newspaper, the Marion (Ohio) *Star,* and is an author of nationwide reputation, with seven novels, three books for children, one book for boys, and four books of verse to his credit—besides many short stories, special articles, and campaign songs.

Of course, Dr. Naylor is in politics, too. It is next to impossible for an Ohioan to keep out of politics. "I play the game of politics because I like it," says Dr. Naylor, "not with the expectation of reforming the people, and not because of the hope of reward. I aspire to no seat among the mighty. I simply desire to live my own life, in my own way, to my own satisfaction. If I can do a little good every day in so doing—well, so much the better." It was through politics that he and Senator Harding became acquainted, during the campaign of 1910 when Harding ran for Governor of Ohio and Dr. Naylor was the Republican candidate for State Senator of his home district. Both were defeated. During the course of the campaign they spoke from the same platform on numerous occasions and a warm friendship sprang up betwen them that has continued ever since. When Senator Harding was elected to the United States Senate in 1914 he chose Dr. Naylor to take his place as the writer of leaders for the *Star*. Dr. Naylor coupled this work with his medical practice and continued to reside in Malta, where he has practised ever since he got his medical degree at Starling Medical College, in

Columbus, Ohio, in 1886. Malta is but a few miles from Pennsville, Ohio, where Dr. Naylor was born on October 4, 1860, and so great is his affection for the quiet little Ohio village, and so strong his dislike of city life—even such mild city life as is afforded in Marion—that no temptations have succeeded in weaning him away from it. "I like the country; I dislike the city," says Dr. Naylor. "I've spent days in New York, Boston, Chicago, Cleveland, Columbus, and other cities, but I've always been glad to get away from them and back to the rural solitudes."

It may readily be guessed that Dr. Naylor took a very active part in the recent campaign which resulted in the Harding landslide. He has taken part in every campaign in Ohio for the past thirty years, but it was natural that in this last campaign, with a personal friend running for the Presidency, his political enthusiasm should be keyed up to its maximum pitch. Paraphrasing the old adage, apparently Dr. Naylor's motto is, "Let me write the songs of a campaign and I care not who makes the speeches," for he has written probably more campaign songs than any other living man, and they have been first class ones, too. If there are any who doubt Dr. Naylor's skill along this line, it is only necessary that they peruse the pages of the *Republican Campaign Songbook* for 1920, issued by the Ohio State Republican Executive Committee, and be convinced. The book is largely the work of Dr. Naylor, and gives ample proof of his consummate cleverness in such work. They are rollicking songs, for the most part written to fit the tunes of *Casey Jones, A Hot Time in the Old Town, Long Boy,* and such like droll ditties, full of irony and ridicule designed to make a laughing stock of the opposition and to inspire enthusiasm and faith in the ticket and cause espoused. Some are in a more sober vein, however, as if to keep a proper emotional balance and adjustment, and carry such staid airs as those of *America* and *The Battle Hymn of the Republic*. But whether blithesome or serious, Naylor's campaign songs always have a touch of inspired fervor about them, and this was particularly true of his efforts during the recent campaign.

Naylor's four volumes of poetry show him to be capable of some very gracefully turned verse full of homespun optimism, lively humor, and love of his fellowman. He sings of those homely themes that are close to the heart of that class of reader who knows what he likes and likes it so well that he clips it out and carries it around in his pocket, or else pastes it in a scrapbook. They are poems of simple appeal, of the James Whitcomb Riley type, but with less emphasis on the uncouth. In them Naylor touches deftly upon all those humble little phases of life which go to make up the existence of the commonalty of the rural sections of the Middle West. They are the verses of a natural poet whose heart is flowing over with song, and they are a refreshing relief from the stilted erudition that marks so much of the poetical product of today. Naylor's novels include *The Sign of the Prophet, The Kentuckian,* a vividly told story of Ohio life in Civil War times; *The Misadventures of Marjory,* the story of a young, vivacious and audacious heroine of the desperately willful type; *Under Mad Anthony's Banner,* a tale of the War of 1812; *The Scalawags, In the Days of St. Clair,* a Middle West historical novel, and *The Cabin in the Big Woods,* a story of pioneer Ohio life.

Dr. Naylor was educated in the public schools of Ohio and at Marietta College, Ohio, after which he attended Starling Medical College. "I'm sixty years old according to the records, but I'm 600 years old when it comes to varied experiences, and I'm 6,000 years old when I come to count the mistakes I've made and the blunders I've committed," he says. "I'm a Yank, not a cosmopolite; an American, not a world citizen. I'm at home where my heart is, not where my hat's off. And my creed is:

> When my country's in the right
> I'll defend her with my might;
> When my country's in the wrong
> I'll help to set her right ere long.
> But whether right, or whether wrong,
> I've just one love—I've just one song:
> My country!

"I like dogs and children. I'm the father of six children, all living and grown, and the grandfather of five. Yet I can still live, and love and laugh. I write prose as a duty or a task; I write verse for the joy of it. When I write prose I live on Grub Street; when I write verse I dwell in Paradise Alley."

Except for his editorials, however, Dr. Naylor is not writing a great deal these days. The editorials, his medical practice, and the office of District Health Commissioner of Morgan County, Ohio, leave him little time for anything else.

NASAL STASIS.

Lord Chesterfield, whose good manners none may doubt, told his son not to use his handkerchief at table, but to rise and go to a window, turning his back to the company. He does not say anything about that irritating, persistent, discordant habit of sniffing. It begins at an early age, sometimes through nonprovision of a handkerchief, or ignorance of how to use it, though there is the sniff of laziness, making it a substitute for what is termed

—a good blow. The sniff of contempt or incredulity is not due to nasal stasis and no handkerchief, be it ever so large, or fine, or perfumed, will spare friends the exasperation of hearing it.

Children in their desire to keep their airways free sniff away any excess of discharge away from the main currents. The semifluid mass in the nostrils is constantly drawn in and is, finally, difficult to remove. Perpetual sniffing, with no wholesome outward blowing, makes the nose an effective incubator. As the majority of diseases are air borne, the condition of stasis is one of danger. It may also lead to chronic catarrh of the mucous membrane owing to the irritation produced by the foreign material present. After having ascertained that the nose is normal, careful and patient attention to the overcoming of bad habits may render the person or child an unobjectionable member of society.

ALOPECIA AND TEETH.

It is a custom now to refer to every research in science, art or religion as a field. In many of these fields the fence has been broken down and permits of cattle and other animals straying, particularly when they can prove a theory or adorn a fact. A pure bred Holstein-Friesian bull strayed calmly into the field of dentistry. The veterinary had noted him to have defective front teeth and such teeth had an intimate connection with alopecia in the human. So the trespasser was watched, and, although his brides were as pure bred as himself, three of five calves had deficiency in teeth, with baldness on the head and neck, though hair was not entirely lacking. Two other calves had baldness, though their teeth were normal in appearance. We believe there is a dentist attached to the staff of every zoo. When the dental clinic is in every village, attention must be turned to establishing a zoological one!

◆

News Items.

Mineola Home for Cardiac Children.—The committee in charge of this fund announces that $20,000 was collected last week on the opening day of the drive for $100,000 to establish a home for chronic cardiac children at Mineola, L. I.

An Epidemic of Hiccoughing in Budapest.—It is reported that an epidemic of hiccoughing in Budapest, which the physicians are unable to control, is causing alarm, although as yet there have been no fatalities. It is believed by some medical authorities that this hiccoughing is a forerunner of influenza.

To Abolish State Narcotic Commission.—Governor Miller, in his message to the New York State Legislature, suggested that the State Narcotic Commission be abolished. Health Commissioner Royal S. Copeland has expressed his approval of the proposal as he believes that the campaign against drug addiction can be handled by the health authorities. Dr. Copeland said that in his opinion the drug addict should be treated in a hospital, not a clinic.

Suicides in Budapest.—According to dispatches from Budapest, cold and hunger are causing an average of fifteen suicides daily in that city.

Aid Association, Philadelphia County Medical Society.—At the recent annual meeting of this society the following officers were elected: President, Dr. E. E. Montgomery; vice-president, Dr. James M. Anders; treasurer, Dr. John B. Turner; secretary, Dr. J. Leslie Davis; directors, Dr. J. Solis-Cohen, Dr. William M. Welch, and Dr. P. Brooke Bland.

New Radio Call for Doctor.—"K D K E" is the new wireless call which is to be used by ships at sea to indicate that someone on board is seriously ill and that expert medical advice is needed. Medical officers are to be kept within reach of the Navy department radio to answer calls so that they will be able to diagnose and prescribe by wireless when their assistance is sought.

Society of Industrial Medicine Organized.—The Wisconsin Association of Industrial Physicians and Surgeons was organized recently, its membership consisting of the physicians and surgeons employed by industrial corporations of Wisconsin. Dr. Clare E. Schram, of Beloit, is president; Dr. Robert A. Waite, of Milwaukee, vice-president, and Dr. Robert E. Fitzgerald, of Milwaukee, secretary-treasurer.

Dr. Friedman's Turtle Serum.—The Berlin Medical Society recently held eight meetings for the purpose of discussing the value of Dr. Frederick F. Friedman's turtle serum in the treatment of tuberculosis, but failed to reach a decision that was acceptable to the membership of the society. Further experimentation was advised. This serum was investigated for more than a year by the United States Public Health Service, but was discredited in 1913. A bitter fight for and against Dr. Friedman has raged in German medical circles since the discovery of the cure was announced.

Public Health Service Activities.—The Venereal Disease Division of the United States Public Health Service has received an appropriation of $200,000 for the next fiscal year. The amount asked for was $336,715. The Bureau asked for $50,000 for health education and $200,000 for the control of influenza and other epidemic diseases, but the request was not granted. The sum of $80,000 is provided for the maintenance of a home for lepers at Carville, La. An appropriation of $50,000 was granted for the control of biological products.

Association for Research in Nervous and Mental Diseases.—At the first annual meeting of this association, held in New York on December 28th and 29th, Dr. Walter Timme was elected president, Dr. E. W. Taylor, vice-president, and Dr. Foster Kennedy, secretary-treasurer. A commission on scientific research was appointed, composed of the officers, *ex officio,* and the following members: Dr. Charles L. Dana, of New York; Dr. William G. Spiller, of Philadelphia; Dr. Hugh T. Patrick, of Chicago; Dr. Bernard Sachs, of New York; Dr. Israel Strauss, of New York; Dr. Lewellys F. Barker, of Baltimore, and Dr. J. Ramsay Hunt, of New York.

Red Cross Health Work.—Chief among the activities, during the past year, of the Health Service of the American Red Cross Society, organized about a year ago by the Atlantic Division of the society, was the establishment of seventeen health centres in New York State, six in New Jersey, and three in Connecticut, and the inauguration of various phases of health service in sixty-one other places in the division.

Increase in Alcoholic Insanity in Chicago.—Cases of insanity from alcoholism have increased in the Cook County Psychopathic Hospital since prohibition went into effect, according to the quarterly report of Dr. James Whitney Hall. Dr. Hall reported an increase of thirty-three per cent. in alcoholic cases in December, 1920, over the same month last year, and of sixteen per cent. in November. A slight increase was noted in October over previous Octobers, while in September the increase was thirty per cent.

Mental Disease Among War Veterans.—The Joint Committee for Aid to Disabled Veterans states that the estimated number of veterans of the world war suffering from mental and nervous disorders is 76,688. Twenty thousand of these are now in hospitals, and medical authorities say that during 1921 at least thirty thousand will need hospital treatment. The report shows that in New York State 845 veterans suffering from mental and nervous disorders are being treated in thirty-nine institutions.

Cornell University Endowment Fund.—Cornell University's semicentennial endowment fund amounted to $8,952,770 at the close of the campaign. The total represents gifts from 10,114 former Cornellians, or thirty-two per cent. of all Cornell alumni and former students, and 408 other persons who had not attended the institution. The sum of $6,243,917 will be used for the purpose of increasing professor's salaries, with the exception of one gift of $500,000 for the endowment of research. The remainder comprises gifts for buildings and improvements, including two principal items of $1,500,000 for a new chemistry laboratory and $500,000 for the Medical College in New York city.

Meetings of Local Medical Societies.—The following medical societies will meet in New York during the coming week:

Monday, *January 17th.*—New York Academy of Medicine (Section in Ophthalmology); Medical Association of the Greater City of New York (annual); Psychiatric Society of Ward's Island; Yorkville Medical Society.

Tuesday, *January 18th.*—New York Academy of Medicine (Section in Medicine); Federation of Medical Economic Leagues (annual).

Wendesday, *January 19th.*—New York Academy of Medicine (Section in Genitourinary Diseases); Medico-legal Society; Northwestern Medical and Surgical Society of New York; Woman's Medical Association of New York; Alumni Association of City Hospital.

Thursday, *January 20th.*—New York Academy of Medicine (stated meeting); New York Celtic Medical Society.

Friday, *January 21st.*—New York Academy of Medicine (Section in Orthopedic Surgery); Clinical Society of the New York Post-Graduate Medical School and Hospital; New York Microscopical Society; Alumni Association of Roosevelt Hospital; Brooklyn Medical Society.

Saturday, *January 22nd.*—Harvard Medical Society; Lenox Medical and Surgical Society; New York Medical and Surgical Society; West End Medical Society.

Red Cross Relief for Children in Europe.—The executive committee of the American Red Cross has appropriated $5,000,000 from the society's reserve fund to furnish medical assistance for children in Europe. Dr. Livingston Farrand, chairman of the central committee of the Red Cross, in making this announcement, said that this work must not be confused with that of feeding the several millions of children in Europe who are not diseased but are threatened with starvation. The general feeding problem is being handled by the Europe Relief Council, composed of eight organizations.

Personal.—Dr. Robert P. Bay has been appointed a member of the Board of Supervisors of City Charities, Baltimore, to succeed Dr. J. Whitridge Williams, resigned.

Dr. Roger S. Morris has resumed his work in the College of Medicine of the University of Cincinnati, after a year's leave of absence.

Dr. Henry Cuthbert Bazett, Cheselden Welsh lecturer of clinical physiology at the University of Oxford, has accepted the chair of physiology in the Medical Department of the University of Pennsylvania.

Professor A. B. Macallum, of McGill University, Montreal, will leave for the Orient in March, to deliver a course of lectures, extending over a period of seven months, at the medical college in Peking, China.

Died.

Bartlett.—In New York, on Wednesday, January 5, Dr. William Allen Bartlett, aged sixty-three years.

Conrad.—In Glendale, Cal., on Saturday, December 25th, Dr. Andrew O. Conrad, aged fifty-three years.

Farnham.—In Almond, N. Y., on Thursday, December 30th, Dr. L. D. Farnham, aged ninety-one years.

Glass.—In Beech Bottom, W. Va., on Tuesday, December 21st, Dr. Montgomery Walker Glass, aged sixty-seven years.

Horne.—In Anderson, Ind., on Tuesday, December 21st, Dr. William N. Horne, aged sixty-seven years.

Jack.—In Hornell, N. Y., on Friday, December 31st, Dr. Harvey P. Jack, aged fifty-five years.

Jacobs.—In New York, on Thursday, December 30th, Dr. Louis Jacobs, aged thirty-nine years.

Kingsman.—In Washington, D. C., on Friday, December 31st, Dr. Richard Kingsman, aged sixty-six years.

Knipe.—In New York, on Wednesday, January 5th, Dr. George Knipe, aged sixty-three years.

Leonard.—In Broome Center, N. Y., on Sunday, December 26th, Dr. Duncan M. Leonard, aged eighty-three years.

McFadden.—In Buffalo, N. Y., on Thursday, December 23rd, Dr. James J. McFadden, aged seventy-one years.

McLaughlin.—In Washington, D. C., on Monday, January 3rd, Dr. Thomas Notley McLaughlin, aged fifty-nine years.

Messenger.—In New York, on Wednesday, January 5th, Dr. Joseph E. Messenger, aged sixty-seven years.

Schweitzer.—In Reading, Pa., on Sunday, December 26th, Dr. Richard S. Schweitzer, of Adamstown, aged sixty-eight years.

Swift.—In Castle Creek, N. Y., on Tuesday, December 28th, Dr. Charles L. Swift, aged seventy-one years.

Woodbury.—In Clifton Springs, N. Y., on Thursday, January 6th, Dr. Malcolm Sumner Woodbury, aged forty years.

Book Reviews

MEDICAL GYMNASTICS.

Medical Gymnastics in Medicine and Surgery. By E. Bellis Clayton, M. B., B. C. (Cantab.), Director of the Physiotherapeutic Department, and in Charge of the Massage and Electrical School, King's College Hospital, London. New York: Longmans, Green & Co.: London: Edward Arnold, 1920. Pp. viii-159.

The title is somewhat alarming until the nurse and doctor find it is not purposed to introduce calisthenics or acrobatic feats into daily treatment. In fact, a great many of the exercises are vicarious, for they include massage, passive movements, pétrussage, kneading, stroking, effleurage.

But, some say, all this a competent masseuse is supposed to know. Yes, the mechanical side, but does she know when to abstain? The one who understands the conditions underlying treatment is invaluable, the pure mechanician is a constant source of anxiety to the doctor. Those who do not know will be greatly helped by a perusal of the book, those who do know will be surprised to find how much they have forgotten, or how much they have acquired through intelligent practice.

General pathology and principles of treatment stand on the threshold, then these various divisions are spoken of: skin, muscles, fractures, joint diseases, deformities, circulatory diseases, respiratory diseases, the genitourinary and the nervous system, concluding with a scheme of exercises and principles of reeducation.

By the printer's aid, much wading through uniform type is saved. The disease and its various forms are given, then their causes, symptoms and treatment, each heading in different type. A warning is given to distinguish between voluntary and involuntary movements, particularly in spastic cases, because the latter do not mean recovery but exaggerated reflexes. The popular idea that massage is simply a mixture of indiscriminate rubbing, kneading and stroking shrinks away with all this knowledge revealed.

INDIGESTION.

Textbook of Indigestion. By Dr. G. Herschell. Revised and Rewritten by Adolph Abrahams, O. B. E., M. D. (Camb.), M. R. C. P. (London), Assistant Physician to Westminster Hospital, to the Hampstead and North-Western General Hospital, etc., etc. New York: Longmans, Green & Co.; London: Edward Arnold, 1920. Pp. 228.

The laity have a wonderful atlas of their own devising in which the topography of the stomach is somewhat vague. A small boy came to a London dispensary with a mother made diagnosis. It said, "Bil 'as stumik ake," and Bil rubbed his hand over the lower part of the belly; on which part hot cloths are usually put when ordered for the stomach. By the help of the same atlas, a person will press his hand over the stomach and say his heart is troubling him. But, nowadays, doctors are allowing patients to learn through x ray plates and fluoroscopy, and elderly nervous patients, who have taken every aperient they could get, are annoyed to find their doctor putting more emphasis on quiet mentality, good company and pleasant food than on some pill or powder.

Why a fourth edition? Well, in that of 1905, organic diseases of the stomach were not specially dealt with, nor the great advance in radiology and our conception of functional disease. The reviewer has rarely met a book so clear or comprehensive. It does not minimize the slight pains of the neurasthenic nor draw gloomy pictures of those organically diseased. He admits a certain immunity to foods. How the rich man and the laborer might exchange dinners and both be very ill in consequence. That the indigestion may result not from the food, but from mental causes or environment or hurry: the contents of one meal in the stomach not being got rid of before another is put in. Tea and toast, muffins and hot cakes incur his wrath when taken as an adjunctory meal, or early morning tea preceding breakfast only by an hour. The other day the reviewer saw a tachyphagic fiend put away a bowl of soup, a meat pie and coffee in three minutes, while his neighbor with rusks and fruit carefully munched and munched in a style most Gladstonic. There is a time table giving the approximate time in which different articles of food should leave the stomach, so the dyspeptic can see that his eggs and bacon leave the stomachic depot when his train leaves for town.

The chapter on Nervous Digestion teaches what to avoid and that on Food Recipes will make obedience a pleasure. Carefully read, the patent medicine man will have to close his store and seek a place which possesses no copy of Herschell and Abrahams.

> Lives of rich men all remind us,
> They can't make their lives sublime,
> For the stomachs attached to them
> Keep them doping all the time.

BACKWATERS OF LETHE.

Backwaters of Lethe. By G. A. H. Barton, M. D., Anesthetist to the Hampstead General and Royal National Orthopedic Hospital, etc. Illustrated. London: H. K. Lewis & Co., 1920. Pp. v-151.

This English author is cordially invited to cross the Atlantic where he will find with his colleague, Professor Leonard Williams, that "medicine need not be dull as well as difficult." The fact that he has crystallized his own wide experience for the use of beginners in his own cheerful fashion, dealing with those small matters usually omitted in textbooks, will ensure him a welcome from all students here. The reviewer recalls the far away times at the Society of Anesthetists, when the formality, in contradistinction to American ways, was only softened by coffee and cake, and where, as a newly fledged reporter, he made Dudley Buxton produce necrosis instead of narcosis, and his consequent dodging of the irate speaker.

What is the lure of anesthetics? asks Barton; not in the easy work, for the dental student should be well versed in the laws of heat, mechanics of valves and levers, the law of gravitation and effects of specific gravity in mixtures of weight or fluids, mental and physical qualities are also necessary. He must have a well balanced mind, able to keep cool under all circumstances, good sight, hearing, touch and smell. They have to tell him much during an operation. The lure is in the variety of the work. The problems are endless, arising from the state of the patient, the nature of the operation and the patient's idiosyncrasy — an unknown quantity. Though the responsibilities are great, the operation once over, the anesthetist's task is, as a rule, finished. There is a certain sporting element, though the more one plays the game, the more the rules and probabilities are grasped and perfection reached. Anesthetists vary, but Barton names five years as a period for mastering the essentials, and another five to deal with every emergency.

Some points on chloroform are then dealt with, also alkaloids, their use and abuse, gas, modern methods, finally, shoals and rapids. Barton compares American and English methods, but is certainly justified in quoting his own methods based on success in thousands of cases. His rare failures, frankly given, his genial way of giving information, all tempt the reader to do more than glance over this helpful volume.

MOON-CALF.

Moon-Calf. By Floyd Dell. New York: Alfred A. Knopf, 1920.

Moon-Calf is a book so unusual in the annals of our literature that it should be read at once by everyone interested in American life and in literature as a fine art. It is the biography of a young near rebel of the middle west, who develops in the extraordinarily inarticulate environment of a small Illinois town, but it is more. Floyd Dell shows here the grim and arid subsistence which the small town has to offer to the young man of talent—which America herself has to offer to the young man of talent, though the author may not have meant anything so sweeping. With all this, *Moon-Calf* is a novel which, once started, it is impossible to put down, written in the "light and laughing" prose to which the author refers, and with a delicate and distinguished craftsmanship.

Of particular interest to physicians is the fact that this book is, in a sense, a product of psychoanalysis. Many writers enunciate truths about the hidden places in the human soul of whose implications they are only half aware—a manner of revelation. Mr. Dell is entirely articulate on that score. He does not talk about complexes, but he interprets the events of his hero's life from childhood on with a deft and sure analysis that is truly illuminating. One might almost say that this book could not have been written if Mr. Dell had not been aware of how Felix Fay's fear of living influenced his every action. And he shows the origin of this fear in the childhood of Felix, a dreamy, bookish, fragile child among a group of hoydenish brothers and sisters and schoolmates, a child who compensated for his manifest physical inferiority and his helplessness by a continuous life of fantasy. Felix's great effort, like that of all such young persons, is to translate himself into a living human being.

It is not entirely Felix's fault, of course, that he grew up on dreams instead of realities. Partly his flight was due to the fact that he was so fearfully isolated. There weren't any others like him. There was no appreciable intellectual life in Maple and Vickley, nothing to feed his imagination but the incredibly bare existence of a poor middleclass family in a small middle western town. If he took to books and dreams, it was because there was nothing else to take to. The one exception of his younger days is the episode of Rose Henderson, with its brief and poignant loveliness.

One cannot say that Felix was the victim of puritanism as much as of sheer emptiness. His home was the library, where he read a jumble of everything under the sun, but it was a scattered, unguided reading. School brought him nothing in the way of intellectual stimulus. And this solitary, secluded, ingrowing life of his in books made him a personality lacking in color and positiveness. This is aptly shown in the remark of the novelist, Tom Alden, after Felix has been taken to meet him:

"'I ought to like him. But how can you like a person who isn't there? I like everything he says. But there doesn't seem to be anybody saying it. Darn it all, Helen, he isn't real!'"

But Felix does come to himself, and this through a somewhat devious means, beginning with his introduction to Socialism. Socialism is for him something more realistic than anything he has ever encountered, and in the Central Branch he finds people, too, who bring him realism. There is a salutary cruelty in the verdict of Comrade Vogelsang on Felix's poetry, the pretty poems that have always met with such deferential praise.

"'You have been mooning about, writing verses about life, instead of living,'" says this healthy philosopher. "'You have been afraid to live. Most people are. Something stands between them and life. Not only economic conditions: something else—a shadow, a fear. Perhaps it is safer not to try, they think. So do you. These poems are your consolations for not living. . . . You have a future—a great future—as a consoler of weak souls.'"

Socialism plays an important part in Felix's life, partly because he is helpless economically, drifting from one factory to another and hating his jobs with a feeble and futile hatred. But it is a newspaper work which sets him on his feet—newspaper work with its enforced contact with people and ideas, its joy of creation, its adventurousness. Felix is a better writer of human interest stories and dramatic critic than a news reporter, but it is in the back room of the undertaker's establishment while hunting for news and talking to the rival reporter from the other paper that he begins to learn how to meet the world he lives in.

There are women in this story, of course—quite a number of them, beginning with the half dreamlike playtime with Rose Henderson when Felix is a child and ending with the inherently conventional Joyce Tennant. There is also Margaret, who was to him unreasoning romance, and there is Daisy, whose offering, though sincere, is somewhat too sordid. But Felix does not marry in this book, though it is not exactly his fault. At the end Joyce turns him down for a protective male, which Felix decidedly is not, and Felix is left with his face set toward Chicago—the next step.

It is a different Felix, though, from the early helpless youth—a Felix who has learned the joy of artistic creation and of love, who has found his work—for the time being—and who has learned that a hostile world cannot batter down his individuality. He has learned, moreover, that there are others like himself. This is perhaps the most important lesson of all. He has become a personality.

All this is, of course, much more a personal record than a criticism of American culture, though it is that as well. But it is primarily that absorbing story which every writer longs to put on paper and usually does—the story of finding himself. It is because Felix reaches out in many directions that *Moon-Calf* has so large a scope. The book should be widely read. With its selfknowledge, its sure yet delicate incisions into the fabric of our social and economic life, its fluid and lovely technic, it is a significant first novel and certainly a most noteworthy book.

YESTERDAY AND TODAY.

Caius Gracchus. A Tragedy. By Odin Gregory. With an Introduction by Theodore Dreiser. New York: Boni & Liveright, 1920. Pp. 172.

Dreiser's introduction has performed the reviewer's task so well that little remains to be said. That little, however, affords opportunity to emphasize the values that this virile work brings so unexpectedly to our present day reading world. It is an unexpected thing to come upon this drama of measured beauty, strength, and quiet but absolutely fearless setting forth of truth. Dreiser has boldly placed the writer high in the realm of letters both for his thought and form.

One wonders at first if the place has been measured too high. Here is a drama of an almost forgotten history. Any message for today may be lost in the dullness with which time tarnishes the most brilliant of events. Then as one reads and finds that these old pages have been so clearly evoked that each character does live and breathe, another objection arises. There is startling similarity to the evils of today which go about in the same sheep's clothing. There is sharp conflict between protection at any price, utilized for any selfish end, and, opposed to it, the sincerity of real constructive expansion with opportunity for each and all. It seems as if the dramatist must simply have wrenched present economic conditions out of their setting and readapted a historical garb to them. Gregory himself has anticipated such a charge by giving us in footnotes as well as in his preface the simple facts and the unadorned statement of them by the historians of that far distant Rome.

The reader can only feel, therefore, with Dreiser, that Gregory has something to say, something that is eternally human, that recalls men today as it would have done in that past age, to judge clearly between two aims, incompatible, irreconcilable. One is genuinely constructive, selfforgetful in engaging the self in something larger than the narrow ends of its own gratification. On the other hand, is the self steeped in greed of power, wealth, pleasure, and stupidly or maliciously fearful of progress which threatens such arrogated possessions? So well does the drama represent these contrasted aims, each in its own way, that the hero is broadly human in his heroism, awakening responsive chords of our best aspirations, evoking righteous indignation in his defeat; and the drama must be read closely to detect the machinations devoted to his defeat. For here is the same plausibleness with which selfishness today deceives the very elect, those who would fain follow what is worthy. Surrounding these in the play are to be seen also those of the herd who hearken to the last voice which has spoken, the unthinking men who are swayed indifferently to one side or the other.

It is true that the character drawing is distinctly individual. The long speeches, as Dreiser has said, we do not avoid. One returns rather fascinated to reread the truth they express, to discern the character lineaments they contain. Lydia's long harangue in Act IV gives a vivid picture both of the woman and the man who prostitute one another and society to their own gain or pleasure. The setting of the speech saves it from being a merely moralistic display of the dramatist and makes it only more poignantly relevant to the drama's purpose. It can be agreed that the drama is indeed vital enough to be brought to the stage.

CLEMENCEAU'S SHORT STORIES

The Surprises of Life. By Georges Clemenceau. Translated by Grace Hall. Garden City and New York: Doubleday, Page & Co., 1920. Pp. vi-326.

The name of this book is the only thing that invites adverse criticism. It is inadequate; it belongs to the conventionality which the author so gracefully flays throughout these stories. Perhaps in its original form the name conveys more of the exquisitely subtle flavor of the book. The writer discloses facts in character and behavior which only a keen observation would discover. The existence of these realities in his sometime neighbors, even feathered ones, might come as a jolting surprise to many readers were they less cleverly brought to view. But so skillfully does Clemenceau turn these natures over to discover their reverse sides that his revelations strike gently. So keen is his probing, so accurate his analysis of what lies there, that his revelations cannot be taken lightly. They arouse serious reflection upon human nature.

The reader is awakened to share the writer's rare sympathy, his patient understanding of the slowness, the unevenness of human development. He comes not to censure the fumbling stupidity of lives bound under custom, unaware of their own possibilities. There is a genuine pity, rather, not untempered with the brightness of humor. With this the reader follows the peasant, the monotonous toiler, the cunning selfseeker even, and those also who, bound in by conventional demands, find private tragic exercise for the irrepressible flames of hatred, the distortion of what might have been love. It is a pity which is rather a sympathetic attempt better to understand human society and the limitations and conflicts which continue in it, as the soil out of which, slowly, something else may arise.

The shafts of censure direct themselves in a satire no less true because gracefully tipped. These are aimed against cupidity, the brilliant traditions which blazon upon such foundation, the approval of men and women for only these protecting appears ances. Otherwise the wisdom of this keen analyst is proffered in the brighter and sadder notes of the countryside, the picture that wins the heart to inner realities. These find their own, sometimes, in spite of the outward smothering conceits. They flourish even when in the end they must pay penalty to the latter.

No one can read the book thoughtfully without a closer realization of these inner truths of human lives, and without a thrust of responsibility toward that which is within and away from the falseness without. In this insistence on the individual and his sincerity to himself one catches a glimpse of the source of Clemenceau's own unique power, that of the strong man of France.

AN ADVENTUROUS DOCTOR.

The Story of Doctor Dolittle. Being the History of His Peculiar Life at Home and Astonishing Adventures in Foreign Parts. Never Before Printed. Told by HUGH LOFTING. Illustrated by the Author. New York: Frederick A. Stokes Company, 1920. Pp. 180.

Put yourself in his place, leave aside the incredulity, the superciliousness of unmellowed age. Curl up in an armchair with Doctor Dolittle's book, recall the pleased expectancy with which you once received a new book, and, in a short while, you will find your big toe waggling and a red flush of gratified desire aflame on your cheek, and a smile of full content, like Prince Bumpo on page 96.

John Dolittle, M. D., loved animals, and eventually, growing poorer, became a doctor for animals, and his clever parrot taught him animal language, but he did not make much money. Suddenly, he had a wire from Africa, saying a dreadful sickness had attacked the monkeys. Would he come and help them? Well, he had no money, but a sailor lent him a boat, and then the fun begins. He fairly tumbles into adventures, wild beasts, pirates, a mixture of all that children love, with a wild disregard of probabilities or commonplace sequences. The author evidently knows children well. He does not talk down to them or slyly insert sentiment to please the grownups, so that they may say, "What a sweet story! I must get it for Tommy." No, he does not care for grownups one bit; just loves the children.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

MASTER EUSTACE. By HENRY JAMES. New York: Thomas Seltzer, 1920. Pp. 280.

COLLECTED POEMS. By ALFRED NOYES. Voume III. New York: Frederick A. Stokes Company, 1920. Pp. ix-315.

AVIATION MEDICINE IN THE A. E. F. Prepared in the Office of the Director of Air Service. Washington: Government Printing Office, 1920. Pp. 322.

THE ROCKEFELLER FOUNDATION INTERNATIONAL HEALTH BOARD. Sixth Annual Report. January 1, 1919-December 31, 1919. New York: 61 Broadway, 1920. Pp. xiii-210.

THE SEVEN WIVES OF BLUEBEARD AND OTHER MARVELOUS TALES. By ANATOLE FRANCE. A Translation by D. B. STEWART. London and New York: John Lane Company, 1920. Pp. vi-216.

POOR WHITE. By SHERWOOD ANDERSON. New York: B. W. Huebsch, Inc., 1920. Pp. 371.

MARIE CLAIRE'S WORKSHOP. By MARGUERITE AUDOUX. Translated by F. S. FLINT. New York: Thomas Seltzer, 1920. Pp. 239.

THE GOLDEN BARQUE AND THE WEAVER'S GRAVE. By SEUMAS O'KELLY. New York and London: G. Putnam's Sons, 1920. Pp. 253.

THE REVELS OF ORSERA. A Mediæval Romance. By RONALD ROSS. New York: E. P. Dutton & Co., 1920. Pp. vi-393.

INSTINCT AND THE UNCONSCIOUS. A Contribution to a Biological Theory of the Psychoneuroses. By W. H. R. RIVERS, M.D., D.Sc., LL.D., F.R.S., Fellow and Prælector in Natural Sciences, St. John's College, Cambridge. Cambridge: The University Press, 1920. Pp. viii-252.

THE ESSENTIALS OF HISTOLOGY. Descriptive and Practical For the Use of Students. By Sir EDWARD SHARPEY SCHAFER, F. R. S., Professor of Physiology in the University of Edinburgh; Formerly Jodrell Professor of Physiology in University College, London. Eleventh Edition. Philadelphia and New York: Lea & Febiger, 1920. Pp. xi-577.

SYPHILIS. By LOYD THOMPSON, Ph. B., M. D., Physician to the Syphilis Clinic, Government Free Bath House; Visiting Urologist to St. Joseph's Hospital; Consulting Pathologist to the Leo N. Levy Memorial Hospital, Hot Springs, Arkansas, etc. Illustrated with Eighty-one Engravings and Seven Plates. Second Edition, Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1920. Pp. xix-486.

CLINICAL OPHTHALMOLOGY FOR THE GENERAL PRACTITIONER. By A. MAITLAND RAMSAY, M.D., Fellow of Royal Faculty of Physicians and Surgeons, Glasgow; Lecturer on Ophthalmology, University of Glasgow; Ophthalmic Surgeon, Glasgow Royal Infirmary, etc. With Foreword by SIR JAMES MACKENZIE, M.D., F.R.S. London: Henry Frowde (Oxford University Press) and Hodder and Stoughton, 1920. Pp. xx-500.

A TEXTBOOK OF PHARMACOLOGY AND MEDICAL TREATMENT FOR NURSES. By J. M. FORTESCUE-BRICKDALE, M.A., M.D. (Oxon.) M.R.C.P. (Lond.) Capt. R.A.M.C. (T.F.); Physician to the British Royal Infirmary and Clinical Lecturer in the University of Bristol; formerly Lecturer on Pharmacology in the University of Oxford. London: Henry Frowde (Oxford University Press) and Hodder and Stoughton, 1920. Pp. xiii-392.

PRINCIPLES OF BIOCHEMISTRY. For Students of Medicine, Agriculture and Related Sciences. By T. BRAILSFORD ROBERTSON, Ph. D., D. Sc., Professor of Physiology and Biochemistry in the University of Adelaide, South Australia; Formerly Professor of Biochemistry in the University of Toronto; Professor of Biochemistry and Pharmacology in the University of California. Illustrated with Forty-nine Engravings. Philadelphia and New York: Lea & Febiger, 1920. Pp. xii-633.

TROPICAL OPHTHALMOLOGY. By ROBERT HENRY ELLIOT, M.D., B.S. (Lond.), Sc.D. (Edin.), F.R.C.S. (Eng.), Lieutenant-Colonel I.M.S. (Retired), Late Superintendent of the Government Ophthalmic Hospital, Madras and Professor of Ophthalmology, Medical College, Madras, Honorary Fellow and Gold Medallist of the American Academy of Ophthalmology and Otolaryngology, etc. With 7 Plates and 117 Illustrations. London: Henry Frowde (Oxford University Press) and Hodder and Stoughton, 1920. Pp. xxiii-525.

HISTORY AND BIBLIOGRAPHY OF ANATOMIC ILLUSTRATION IN ITS RELATION TO ANATOMIC SCIENCE AND THE GRAPHIC ARTS. By LUDWIG CHOULANT. Translated and Edited with Notes and a Biography by MORTIMER FRANK, B. S., M.D., Secretary, The Society of Medical History, Chicago; Attending Ophthalmologist, Michael Reese Hospital, Chicago. With a Biographical Sketch of the Translator and Two Additional Sections by FIELDING H. GARRISON, M.D., and EDWARD C. STREETER, M. D. Chicago: The University of Chicago Press, 1920. Pp. xxvii-435.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Treatment of Neurosyphilis by the Intraspinal Route.—Albert Keidel and Joseph Warle Moore (*Bulletin of the Johns Hopkins Hospital,* November, 1920) gave twenty-five cases of neurosyphilis intraspinal injections of mercurialized serum, followed within twenty-four hours by an intravenous injection of arsphenamine. This method of treatment was designed to test a conclusion of Swift that local irritation may increase the permeability of the meninges. Mercurialized serum was chosen because of its irritating effect, and intraspinal treatments were given in courses, usually of six treatments, administered one each week, and each course was followed by ten to twelve weeks of mercury inunction. The clinical results of this treatment were good in about sixty per cent. of the cases, but the serological results were poor in practically all the groups treated. A comparison of the data with those of other workers shows that the results obtained from mercurialized serum, used by the method the authors describe, are inferior to results obtained either by themselves or by others with the Swift-Ellis method. The conclusions drawn are that intraspinal therapy is a necessary and rational adjunct in the treatment of neurosyphilis in cases which fail to respond to routine antisyphilitic treatment. The mode of action of intraspinal medication does not depend upon increased permeability of the meninges. Aseptic meningitis produced by intraspinal injection of irritants may prove an untoward rather than a beneficial factor in the treatment of neurosyphilis.

Different Types of Streptococci in War Wounds.—Pierre Pruvost (*Paris médical,* February 21, 1920) points out that in the bacterial flora of war wounds two sorts of streptococci may be differentiated. The first is pathogenic and causes a severe, febrile constitutional reaction; the other causes no marked general symptoms. The first type consists nearly always of hemolytic streptococci, and forms homogeneous chains composed of regularly arranged cocci or cocci undergoing reproduction by fission. The second type usually consists of nonhemolytic streptococci, and the chains formed are not homogeneous, being composed of unlike, unequal, and irregular cocci. The cultures of the second type are generally more robust than those of the first. Where a distinction between the two types within twenty-four or forty-eight hours is imperative, precluding isolation and secondary identification, one should endeavor to establish the distinction on the basis of the foregoing morphological characteristics. In doing so the length of the chains of bacteria, the rounded or oval outlines of the cocci, as well as their size, should be disregarded, attention being directed exclusively to the regularity or irregularity of the several cocci composing the individual chains. Great length and curling of the chains are not characteristic of the streptococci. Even at the first inoculation in bouillon enterococci similarly disposed were noted.

A Pharmacological Study of Benzyl Benzoate.—Edward C. Mason and Carl E. Pieck (*Journal of Laboratory and Clinical Medicine,* November, 1920) say that, owing to the fact that a considerable number of clinical conditions, such as are due to increased activity or increased tonus of the intestinal tract, excessive or abnormal contraction of the uterus, bronchial spasm, etc., have been described as being benefited by the use of the benzyl esters. They have attempted to study the mechanism by which these conditions are relieved, and to ascertain the concentration of the drug in the blood necessary to produce the desired results. Their experiments with dogs are fully reported, and the results given in detail.

Genital Tuberculosis in the Male.—J. Dellinger Barney (*American Journal of Surgery,* August, 1920) presents among his conclusions the following which he considers of importance: 1. The epididymis is the primary focus in the genital tract. 2. It is always secondary to a focus elsewhere in the body, this focus being situated most often in the lung. 3. The prostate and seminal vesicles are invaded by the disease early and often, but after removal of the epididymis clinical cure is finally established. 4. The second epididymis becomes involved in at least half the cases, but involvement of this organ may be obviated by early resection of its vas deferens. 5. Orchidectomy is unnecessary if the testicle is free from disease, and even if affected the diseased portion can be successfully removed in many instances. Even a portion of one or both testicles is worth saving, both on account of the internal secretion and the mental effect upon the patient. After castration the sexual function may be unimpaired.

Value of the Wassermann Reaction in Obstetrics.—J. Whitridge Williams (*Bulletin of the Johns Hopkins Hospital,* October, 1920) found that 449 women, delivered between April, 1916, and December 31, 1919, gave a positive Wassermann test, the incidence being much greater in the black than the white woman, 16.29 and 2.48 per cent. respectively. The figures showed that less than one half of such women will have syphilitic children. The cases were divided into three groups, those that had been well treated, those which were imperfectly treated, and those which were not treated at all, the incidence of syphilitic children being for these groups 6.7, 33.2, and 48.5 per cent., respectively. However, of sixty-five women giving a negative Wassermann test, forty-three of their children were definitely syphilitic, eleven others died but were not autopsied, three were negative at autopsy, and eight were discharged in good condition. The information obtained from the Wassermann tests made on the fetal blood is not considered to be commensurate with the time consumed nor the money spent on such investigations. It is also considered hazardous to draw any conclusions concerning the condition of the placenta or of the child from the existence of a positive maternal Wassermann during pregnancy. The microscopical examination of the placenta tallied with the clinical and anatomical findings in the child in from eighty to ninety per cent. of the cases, which is a marked contrast to the forty per cent. obtained from a positive maternal Wassermann. Williams discusses Colles's law, and states that in his opinion the possibility of spermatic infection and the admissibility of Colles's law have not yet been conclusively proved or disproved.

Virulent Diphtheria Bacilli Carried by Cats.—James S. Simmons (*American Journal of the Medical Sciences,* October, 1920) reports a case in which an elderly woman developed a fatal diphtheritic pharyngitis after close contact with a cat which had been sick one week. A second cat which had been in contact with the first cat became sick and died ten days later. The patient had a grayish brown pseudomembrane covering her uvula, tonsils, and posterior pharynx. The first cat had a small yellowish gray pseudomembranous ulceration in the left nasal passage, the second cat showed ulcerations of both vocal cords covered with a grayish-white false membrane. Diphtheria bacilli of intermediate virulence for guineapigs were isolated from all three lesions.

Treatment of Diphtheria Carriers.—A. R. Fraser and A. G. B. Duncan (*Lancet,* November 13, 1920) differentiate between a "positive throat" and a "true diphtheria carrier." The latter carries bacteria which retain their virulence despite the most energetic disinfection. Stock diphtheria vaccine cures the positive throat, but up to the present time no thorough cure has been offered for the true carrier. The authors base their work on the theory that in a carrier there is equilibrium between the power of immunity of the individual and the toxin. A detoxicated Klebs-Löffler vaccine, prepared after the manner of D. Thompson, was used in three cases outlined in the paper. All lethal bacteria disappeared after inoculations of constantly increasing concentrations. It is pointed out that the treatment may be used on convalescents in case of delayed resolution, and the method apparently offers immunity to those exposed to infection.

Diphtheria Bacillus Carriers.—C. G. Guthrie, J. Gelien, and W. L. Moss (*Bulletin of the Johns Hopkins Hospital,* November, 1920) report the results of an extensive investigation, covering the examination of eight hundred school children. From this study they conclude that the diphtheria bacilli present in a majority of healthy carriers are avirulent, that such bacilli cannot produce diphtheria, and that there is no proof that they can acquire virulence. It is, therefore, evident that carriers of avirulent diphtheria bacilli are not a menace to anyone in particular or the community as a whole, and interference with their liberty on the grounds of their being carriers is not warranted and is unjustifiable. The standard guineapig test is believed to be a safe one for virulence, but there is an urgent need for a simpler, quicker, and less expensive virulence test to be developed. The carrier of the virulent diphtheria bacillus is of course another matter, and while it is believed that the danger from such carriers has perhaps been overestimated, the authors recognize the fact that diphtheria bacilli derived from such a source may give rise to the disease in susceptible persons.

The Effect of Diphtheria Antitoxin in Preventing Lodgment and Growth of the Diphtheria Bacillus in the Nasal Passages of Animals.—J. Gelien, W. L. Moss, and C. G. Guthrie (*Bulletin of the Johns Hopkins Hospital,* November, 1920). The object of this investigation was to determine whether antitoxin administered subcutaneously would prevent the subsequent lodgment and growth of diphtheria bacilli in the nasopharynx. Guineapigs, rabbits and cats were used. The production of nasal infection or infestation with Bacillus diphtheriæ was quite inconstant, even when the organisms were introduced directly into the nose, and the duration of infection was usually quite brief. The health of the animals was apparently not affected by the mere presence of the bacilli in the nose. The occurrence and duration of infection were independent of the virulence of the strain of organism inoculated, and were wholly unaffected by the previous administration of antitoxin.

Treatment of Single Ostosis of Long Bones.—Reel and Hugger (*Military Surgeons,* September, 1920) state that the individual case determines the treatment. Should the exostosis be superficial and subject to repeated irritation or injury the possibility of sarcomatous change resulting therefrom must be recognized, and the outgrowth removed. Removal is also indicated when the tumor mass is found in such a position as to produce a mechanical derangement in the normal function of a joint, muscle or tendon. The same applies when the exostosis is encountered along the course of important nerves or blood vessels and producing nervous or circulatory complications. When the bony tumor is innocently situated, it can be left unmolested.

Treatment of Goitre with Radium.—A. N. Clagett (*Illinois Medical Journal,* October, 1920) believes that radium should be given a trial in exophthalmic goitre, because there is no mortality, no scar, no pain, and only three or four days' hospitalization. Its advantages over the x ray are that it produces no discoloration of the neck, there is less time consumed in the treatment, and it is simpler to apply. The selective action of radium destroys the harmful cells, while not disturbing the healthy cells. Surgery has not been necessary in any one of forty-seven cases extending back over three years.

Etiology and Treatment of Gastric Ulcer.—John F. Van Paing (*American Medicine,* November, 1920) firmly believes that infection is the sole cause of gastric ulcer; that gastric drainage is a myth, and that gastroenterostomy is to be done only to relieve obstruction to the passage of food or to diminish the irritation of a pyloric ulcer. Ulcer in the corpus is to be treated by excision with the cautery and closure without gastroenterostomy. Small stomata prevent the vomiting, pain and diarrhea so common in large openings made for "gastric drainage and rest."

Value and Significance of Blood Pressure in Obstetrics.—Albert G. Schulze (*Minnesota Medicine,* December, 1920) considers that a series of blood pressure readings properly taken, rather than a series of urine analyses, serve as an index of the eclamptic or noneclamptic condition of the patient. The normal range of blood pressure during pregnancy is between 100 and 130 systolic; if it be below 100 be prepared for shock, if over 150 it is no longer normal.

Treatment of Eclampsia.—James A. Martin (*Charlotte Medical Journal,* August, 1920) guards against eclampsia by examining the urine every two weeks. Do not lay too much stress on negative findings. The blood pressure should be taken regularly as it is of great importance. He does not consider the use of veratrum viride advisable. In every case of actual eclampsia the uterus should be emptied as quickly as possible, preferably by Cæsarean section.

Surgical Treatment of Cerebral Hemorrhage in the Newborn.—A. C. Strachauer (*Minnesota Medicine,* December, 1920) writes that untreated cerebral hemorrhage is responsible for fifty per cent. of stillbirths and deaths of infants within the first week of life. The coagulation and bleeding time estimation should become a routine procedure in the newborn, followed by the injection and transfusion of blood when indicated. Infratentorial hemorrhage of infancy may be treated by lumbar puncture; supratentorial hemorrhage requires prompt performance of a craniotomy.

The Treatment of Syphilis of the Central Nervous System.—Clyde L. Cummer (*Ohio State Medical Journal,* September, 1920) summarizes the treatment as follows: It must be intensive and protracted; in some manifestations it may be utterly powerless. Syphilitics should be treated vigorously and should be kept under observation until clinical and laboratory examinations prove that the infection has been eradicated in the nervous system as well as elsewhere.

Rest and Exercise in the Treatment of Heart Disease.—Joseph H. Pratt (*Southern Medical Journal,* July, 1920) says that rest was formerly thought to weaken the heart, but is now known to act beneficially by increasing the reserve force of the enfeebled heart. The reserve force measured by the vital capacity can be greatly increased by rest alone. Proof is lacking that exercise strengthens the degenerated heart. Absolute rest is of great value in the treatment of angina pectoris.

Pneumonia in a Woman with a Habitual High Blood Pressure.—M. J. Konikow (*Boston Medical and Surgical Journal,* July 1, 1920) reports a case of this nature in a woman of fifty-four whose blood pressure for the preceding two years had been between 225 and 275, despite repeated attempts to reduce it. Pneumonia reduced it to 130 within three days. Its rise was welcomed as the surest sign of approaching recovery and when it had reached its habitual height the patient had recovered. The moral drawn is to leave high blood pressure alone, if its cause cannot be removed. In itself it is Nature's means of selfdefense.

Sugar in the Blood.—R. L. M. Wallis and C. D. Gallagher (*Lancet,* October 16, 1920) have devised a convenient and accurate means of estimating sugar in blood. Only a few drops of blood are required. The blood is absorbed on a weighed blotting paper, the sugar extracted, and estimated by comparatively simple operations. There is no inconvenience to the patient, and the analysis is of great utility in diagnosis and treatment.

Effects of Feeding with Calcium Salts on the Calcium Content of the Blood.—W. Denis and A. S. Minot (*Journal of Biological Chemistry,* March, 1920) found that it was impossible to increase the calcium content of the blood of six normal human subjects by the daily ingestion of calcium lactate for a period of six to ten days. Experiments were then carried out on rabbits and cats, and it was sometimes possible to increase the calcium content of their blood by feeding with calcium salts, if the original calcium content of the blood was rather low.

Pregnancy in a Rudimentary Horn of the Uterus.—O. Paul Hempstone (*Surgery, Gynecology and Obstetrics,* November, 1920) states that with more careful history and examination, the diagnosis of this condition can usually be made. In all cases of rudimentary cornua of the uterus the pedicle should be examined by serial sections to confirm the presence of a microscopical canal through which impregnation occurs. All rudimentary cornua should be removed so soon as the diagnosis is made.

Function of Corpus Luteum.—Edward H. Ochsner (*Surgery, Gynecology and Obstetrics,* November, 1920), in a series of observation on the use of corpus luteum, concludes as follows: 1. That an unabsorbed false corpus luteum prevents ovulation and is a common cause of sterility and that the expression or excision of such a false corpus luteum invariably brings on menstruation. 2. That the excision or rupture of a true corpus luteum invariably results in interruption of pregnancy, at least during the early months of preganacy, and that it may be looked upon as a common cause of abortion. 3. That an injury to either the true or false corpus luteum may simulate ruptured extrauterine pregnancy.

Effects of the Various Toxemias upon the Eye.—W. H. Wilmer (*Archives of Ophthalmology,* September, 1920) says that whatever may be the etiology of the ocular expression of the toxemia, the first thing to be done is to eradicate all toxic sources, and then to simulate nature's measures by bringing increased numbers of leucocytes to the zone of activity. This may be accomplished by the local use of hot applications, and, as certain stages of the inflammation, dionin and subconjunctival injections. Nearly all involvements of the anterior portion of the uveal tract require tropine. Deficiency in the secretion of glands should be supplied by organ therapy. In case of retinal hemorrhages accompanied by a prolonged coagulation time, the use of lime salts is indicated. In all toxemias the gastrointestinal tract must receive attention both in regard to diet and therapeutics.

Miscellany from Home and Foreign Journals

Developmental Forms of the Spirillum of Relapsing Fever.—Ardin-Delteil and Derrieu (*Bulletin de l'Académie de médecine,* March 23, 1920) found various hitherto undescribed forms of the spirillum of relapsing fever in the cerebrospinal fluid, blood and pleural and joint effusions in cases of this disease. In the blood stream there were found, apart from the well known spirilla, small granular bodies and short or elongated rods, all highly motile, and persisting in the blood in the interval of apyrexia and even for a time after the final defervescence. These bodies were also seen, though inconstantly, in the cerebrospinal fluid and pleural and joint fluids. There were also found in the same fluids structures analogous to the Balfour or Leishmann bodies. When fixed and stained, these structures appeared as rounded, oval, or irregularly shaped bodies, shaped somewhat like red corpuscles, and measuring two to five microns in diameter. At the periphery of each were seen a large number of minute granules and, when derived from the cerebrospinal fluid, also long, fusiform bodies nine or ten microns in length, sometimes curved, and with an elongated nucleus. Further, the source of all these bodies was found in the cerebrospinal fluid of two patients in the form of large bipartite cells thirty to forty microns in diameter and presenting the appearance of protozoa. Each of these cells contained two nuclei, and at its surface showed numerous pedunculated processes, some eventually breaking off and giving rise to the granular and fusiform bodies already mentioned. In the younger protozoan forms the processes were represented merely by slight surface elevations. Apparently the usual method of reproduction of the protozoön is by ordinary kinesis. Under certain circumstances, however, possibly when the parasite is in a weakened condition, the cell goes through a process of parthenogenesis whereby granular and fusiform bodies are set free from its periphery. Godlewski's experiments have shown that even such small, fragile, unnucleated fragments may later reproduce the active virus.

Social Service and the Clinic.—Alfred C. Reed (*Boston Medical and Surgical Journal,* May 6, 1920) refers the criticisms of the free public clinic to one of three heads: 1. Abuse of the clinic by patients able to pay. To whatever degree this is true, the criticism is justified. He is of the opinion that the bulk of those who appear to be able to pay should be classed among the borderline cases, which require judgment and social study, and that the prevention of this abuse rests with the social service department. 2. Clinics act as feeders for the private practice of the attending staff. In so far as patients are found by the social service department to be able to pay, it is right that they should be referred to members of the staff in rotation as private patients. 3. Poor service to the patient, wholesale medical practice, aiming at number and quantity, rather than careful, efficient, scientific work. Full and careful clinical records, preserved in a permanent file, will go far toward improving the character of clinic service. Not a large clinic, but one characterized by careful and accurate diagnosis and treatment, should be the objective. The functions of the clinic are first, service to the patient; then in order, service to the doctor, to the student, and to the community. The functions of the social service department are given as three:—1. Followup for, a, social relief of patients; b, continued treatment; c, protection and care of contacts and families. 2. Investigation of patients applying for admission to clinic. 3. Training of nurses and social workers. The relation of the social service department to the clinic has not yet reached its full and proper development. This development requires cooperation and greatly increased mutual knowledge on the part of the social workers and the medical staff of the clinic. The work of the clinic, comprising all that is included in social and scientific medicine, can best be translated to the community through the agency of the social service department.

Epidemiology and Etiology of Influenza.—Allan J. McLaughlin (*Boston Medical and Surgical Journal,* July 1, 1920) says that it is probable that influenza is a disease of great antiquity, and that the cause of the world wide pandemic and interpandemic outbreaks is the same. With a strong predilection for the winter months we have influenza with us every year—and in retrospect we can detect in the mortality statistics outbreaks reaching epidemic proportions in twenty-two out of the thirty years since 1889. In 1918-19 the attack rate varied from fifteen to forty per cent., and seemed to be highest in the age group five to nine—declining in each successive age group except twenty-five to thirty-four, which exceeded the rate for the group fifteen to twenty-four. The incidence in 1918-19 was greater in females than in males, and the disparity was most noticeable in the ages from twenty-five to forty, indicating, according to Frost, that the females from fifteen to forty-five were either more susceptible or more intimately exposed to infection than males of the corresponding age. Case fatality in the 1918-19 epidemic was about two per cent. and was slightly higher in females under fifteen, and very much higher in females over sixty than in males of corresponding ages. From fifteen to sixty the case fatality was much higher in males. There was great variation in forty large cities in explosiveness of the epidemic and in the severity as measured by the excess death rates for the entire epidemic period. There seemed to be some correlation between explosiveness and the severity as measured by excess death rates—the greatest mortality being usually, but not always, in cities with a high explosive index. There was little consistency in the explosiveness of the two epidemics, 1918-19 and 1920, upon comparing the indices in the various cities. Cities with a high explosive index in 1918-19 often had a low index in 1920. Most cities with a high explosive index for 1920 had a low index for 1918-19. Memphis, Nashville, and Washington had a high index of explosiveness in both epidemics. There seemed to be some correlation between explosiveness and the general death rate and the rates for the four principal causes of death—pneumonia, tuberculosis, heart disease, and nephritis. There seemed to be considerable correlation between the total excess death rates for the epidemic periods and the general death rate and the death rates for pneumonia, tuberculosis, heart disease, and nephritis. All the evidence points to an immunity of relatively short duration, probably of months rather than years. The etiological cause is unknown. There is not sufficient evidence to warrant the view that the bacillus influenzæ is anything more than a secondary invader. The claims for a filterable virus are strong, but much additional work will be necessary to make certain many things which are now only possibilities. A survey of the whole field and of all available literature has convinced the writer that while further epidemiological studies will have great value and be of intense interest, they will not furnish a solution of the problem. We must have more intensive, comprehensive and sustained laboratory research, using the body fluids and secretions of influenza patients for material, if we hope to solve the problem and secure the biological aids which we now lack for the prophylaxis and treatment of influenza.

Unusual Cases of Mastoiditis.—Harold Hays (*American Journal of Surgery,* September, 1920) says that cases of mastoiditis in New York last winter not only reached alarming numbers but presented unusual complications of a severe nature. In former years it was believed that in ninety per cent. of the cases of acute catarrhal and acute suppurative otitis media, where it was necessary to incise the drum, recovery took place within a few days or a week, and that in only a small percentage of these cases did mastoiditis actually develop. Last winter, however, these figures were reversed; mastoiditis developed in the majority of the cases of acute otitis media. In most of these cases acute suppuration of the middle ear developed, without any previous warning. Some of them occurred after influenza, but the majority of them occurred where there was nothing to make one think that there was going to be any real trouble. In the majority of these cases, the drums were incised as soon as any bulging occurred, and it was the author's invariable practice to have a culture made from the discharge from the incision as soon as possible. These cultures showed a variety of organisms. In the majority of cases, particularly those in which there were complications, the organism was the streptococcus hemolyticus. The blood counts in these cases ranged from 14,000 to 25,000 white blood cells, with a polynuclear count from seventy-five to ninety per cent. The fever was usually high, but in some of the cases where, although the temperature might have been high at the onset of the trouble, after the drums were incised, it generally went down to normal, and remained there regardless of whether the mastoid was involved or not. In two cases the temperature had risen to 106°, and after the drums were incised, gradually went down to normal and stayed normal. However, the symptoms of mastoiditis progressed until it was imperative to operate, and in both instances a total destruction of the mastoid cells was found. The author reported several interesting cases and presented the following conclusions: 1. The number of cases of mastoiditis has become alarmingly large since January, 1920. 2. The majority of infections have been due to the streptococcus hemolyticus. Although this organism is morphologically the same as ever, there is evidence that its virulence is greater and that it has a peculiar ability to destroy bone beyond the mastoid region. 3. The zygoma, beyond the cells usually found, has been found diseased in many cases, causing a severe radiating neuralgia of a supraorbital character. 4. Symptoms simulating a localized meningitis, indefinite in nature and sometimes suspicious of meningitis lethargica (sleeping sickness), have been seen in many cases. 5. Examination of the eyegrounds is most important in suspected cases of sinus thrombosis. A choked disc often is found on the side on which the sinus is involved. 6. Laboratory examinations are of the utmost importance. 7. Transfusion (by the simple Unger method) was a lifesaving measure in two of the cases cited.

Lethargic and Myoclonic Forms of Epidemic Encephalitis.—Pietro Boveri (*Journal of Nervous and Mental Diseases,* May, 1920) reports cases of epidemic encephalitis presenting the unusual symptoms of myoclonic convulsions, both rhythmic and partial, as though produced by an electric current. Dubini in 1846 described a form of disease termed by him electric chorea, a term which in years since has been applied to many manifestations which should probably be better classed as typhoid or malarial fevers or Jacksonian epilepsies. The different symptomatology between the lethargic and the myoclonic types of encephalitis suggests a different pathological localization of the virus. In the lethargic form the localization is particularly on a level with the central peduncles and the locus niger. The writer raises the question whether in the myoclonic type of the disease the centres might not be localized in the opticus thalamus transitorily. The absence of lethargy, together with the striking myoclonic convulsions, justifies the differentiation of a myoclonic type of epidemic encephalitis as distinct from the lethargic type.

Relapsing Fever.—W. K. Calwell (*Lancet,* October 16, 1920) studied 125 cases of relapsing fever among British and New Zealand troops in Cairo. Sixty-nine of the cases were of the North African type, the rest of the Palestine type. The former, which has been described by Sandwith and Balfour, is treated with salvarsan. The latter is often at first diagnosed as malaria or pyrexia. Fever and relapses occur to as high a number as thirteen. Afebrile periods lasted from two to twenty-seven days, and the longer the interval the rarer the relapses. Pneumonia, facial paralysis, and jaundice may complicate cases, but only one of fifty-six cases were fatal. General prophylactic measures should be taken; salicylates and aspirin are used for relief of pain; fluid diet prescribed. Kharsavan in 0.6 grain doses is a specific largely preventing relapses. The disease is tick borne.

Proceedings of National and Local Societies

AMERICAN PEDIATRIC SOCIETY.

Thirty-second Annual Meeting, Held in Highland Park, Ill., May 31, June 1 and 2, 1920.

The President, Dr. THOMAS S. SOUTHWORTH, of New York, in the Chair.

(Concluded from page 87.)

A Twenty-four Hour Schedule for Boys.—Dr. RICHARD M. SMITH recalled that in a previous communication he drew attention to certain fundamental principles with reference to the care of the health of school children, and pointed out lines for the further extension of health supervision. A table had been prepared showing the proper distribution of the boy's time during school hours between study, activity and inactivity. They were now convinced by a further use of the table that it gave a correct distribution of the boy's time.

The parent, the physician, and the teacher were together responsible for the child's life, and no part of that life could be arranged intelligently without the cooperation of all three individuals. For instance, the child's physical environment, such as buildings and fresh air, was dependent, not only upon the proper sanitation of the school building, but upon the room he slept in. His nutrition was maintained not only by the school lunch and the dinner received at school, but also by the breakfast received at home. His educational work in school must be arranged, bearing in mind not only the studies necessary for the school curriculum, but also whether or not he was doing work at home, such as music and languages. His exercise was made up of what he did at home in the afternoon quite as much as of the carefully arranged athletics at school.

A Study of Breast Feeding in the City of Minneapolis.—Dr. JULIUS P. SEDGWICK, of Minneapolis, described a plan to encourage breast feeding that he had been instrumental in putting into effect in Minneapolis. The work fell into two parts: 1. That of maintaining breast feeding. In their private work and in the clinic they had been using certain principles described in a paper presented before the American Medical Association in 1917 for maintaining and increasing the supply of breast milk. They wished to see if these principles could be applied on a larger scale. 2. They wished to ascertain what statistical results they could show by a wider application of these principles as to the proportion of mothers nursing their babies and the effect on infant mortality. In order to maintain and promote the milk supply they had used the well known methods, paying special attention to that of making a demand upon the breast by expression. This he felt was the most important factor in maintaining the supply of breast milk, and had enabled them to accomplish a great deal. The technic used in the expression of the milk was not that of going over the whole gland tissue and using massage, but simply consisted of emptying the sinus back of the colored areola. Expression was used for premature infants, where the mother had poor or inverted nipples, sore breasts, or, if for any reason the baby could not take the breast and they wished to maintain the milk supply.

The other part of carrying out their plan consisted in reaching the public. This they had done by gaining the cooperation of the medical profession, the health department, the Infant Welfare Society, and that of prominent citizens. The mother of every baby born in Minneapolis during the year was either seen by a representative of the organization or reached by mail or telephone. Each mother was given information and literature. She was followed and seen or heard from every month or oftener if necessary. As a result of this work ninety-six per cent. of the babies born in Minneapolis were breast fed, and the mortality had dropped from seventy-one to sixty-five per cent. for that year.

The Fate of Subcutaneously Injected Red Blood Cells.—Dr. ROOD TAYLOR, of Minneapolis, stated that former experimental work had proved that subcutaneously injected red blood cells were qualitatively capable of reaching the recipient's circulation. In this work the usual clinical methods were employed to show that the subcutaneous injection of large amounts of homologous citrated blood into infants produces a decided hemoglobin increase. Using Ashby's method of differential red blood cell counting, the writer then determined that following subcutaneous injection of homologous citrated blood there was no marked absorption of injected corpuscles into the recipient's circulating blood.

The Circulatory System in Nutritional Disturbances.—Dr. W. MCKIM MARRIOTT, Dr. H. MCCULLOUGH, and Dr. K. UTHEIM, of St. Louis, prepared this contribution, which was presented by Dr. Marriott. He stated that in that particular nutritional disturbance known as athrepsia or marasmus, it was very evident clinically that some changes in the circulation had occurred. This was recognized by the low surface temperature, slow pulse, and grayish color of the skin. It had seemed desirable to estimate quantitatively the degree of circulatory changes and, if possible, to determine the cause of the changes. In measuring the circulation they had used the colorimetric method of Dr. G. N. Stewart. Before applying this method to infants they had applied it to animals and compared the results with those obtained by the Ludwig-Strohmühr. The method was easily applied to infants. In a series of twenty-nine normal infants the average flow of the blood was 17.2 c. c. to the 100 c. c. of arm a minute. In applying the method to thirty-five athreptic infants the volume flow of the blood was found to be greatly diminished, sometimes being as low as one or two c. c. a minute. As these infants improved the volume flow of the blood increased, in some instances becoming normal.

The next question was in regard to the cause of the decrease in circulation. One cause of diminished volume flow of the blood was known to be a decreased blood volume. The next step was to determine the blood volume of normal and athreptic infants. In a series of normal infants the average blood volume was 9.1 per cent. of the body weight, the variations being from 8. to 10.8 per cent. The average blood volume of a number of athreptic infants studied was eight per cent. of the body weight. One showed as low as 4.8 per cent. As adipose tissue is a relatively nonvascular organ, none would expect a thin infant to have a larger amount of blood per kilo of body weight than a fat one. They found the reverse to be often the case. This indicated definite decrease in the volume of the blood. The lowered blood volume was sufficient to account for the low volume flow in at least some of these infants. Other factors, however, seemed probably to be operative. The peripheral volume flow of the blood would be increased if capillary or arteriolar constriction had occurred. They found such a constriction to occur in these infants. This was shown by the fact that there was a piling up of the blood corpuscles on the capillary side. Blood obtained by a prick in the skin of these infants showed a distinctly higher hemoglobin in red and white cell counts than blood obtained directly from the veins. This constriction of the arterioles leads to poor peripheral circulation and probably to the gray color of the skin.

They considered the arteriolar constriction as a compensatory mechanism to maintain blood pressure when the blood volume was diminished. They found this mechanism ordinarily sufficient to maintain the blood pressure as they very rarely observed low blood pressures in the athreptic infants studied. Having considered the changes in the blood and in the vessels, they next turned to a consideration of the heart muscle itself. This, as might be expected, would atrophy with the rest of the body, but at postmortem very little change in the heart muscle could be made out. It is possible, however, that functional changes might occur. To determine whether or not such was the case, electrocardiograms were made, and in a certain number of the infants definite changes in the functional activity of the heart muscle were demonstrated. The variations from the normal most frequently observed were low amplitude of all waves. With improvement in the clinical condition of the patients the form of the electrocardiograms changed and this suggested that the alterations in the heart muscle were functional rather than organic. They suggested that poor circulation through the coronary arteries was in part responsible for the changes, a vicious circle being thus established.

Some experiments were done on animals in an attempt to reproduce the athreptic condition. After a period of complete starvation the blood of rabbits was found to be definitely decreased, and also the volume flow. When the animals were again fed they maintained a constant weight for a considerable period of time until the blood volume slowly increased. After this the process of repair became more rapid. In some animals the blood volume did return to normal, and these animals failed to recover their weight and finally died.

The Calcium Magnesium Phosphorus Balance in Children Subject to Convulsive Disorders.—Dr. B. Raymond Hoobler, of Detroit, presented a study of a group of children subject to convulsive disorders, none of whom gave a history of epilepsy in the family. Normals of the same age and weight were used as controls. The balances for phosphorus, calcium and magnesium were determined. In general, it was found that the retention of these minerals was considerably diminished in children subject to convulsive disorders, though in no instance was the balance lowered in all three. In convulsive disorders of this type a search should be made for some mineral deficiency, either in calcium, magnesium, or phosphorus, and if such a deficiency is found an attempt should be made to bring it up to normal.

Electrocardiography in Children.—Dr. Max Seham and Dr. Frederic W. Schlutz, of Minneapolis, presented this paper, which covered the physiological peculiarities of the normal electrocardiograms of children of all ages, including the premature, from one hour to thirteen years; the pulse periods in fiftieths of a second in all ages; the transmission time of both auricle and ventricle, and electrocardiograms in diseases peculiar to childhood. The electrocardiogram at birth was found to be constant, all the newborns, twenty-two in number, showing constant curves. A right ventricular preponderance was characteristic, showing a deep S and a high R_3. This form persisted during the first three months. During the fourth month the S became smaller than the R in Derivation 1, signifying a change from right to left ventricular preponderance. From the fourth month to the end of the first year it gradually changed to the adult type. From the first year on the adult characteristics persisted. In the premature the form of the electrocardiogram was incomplete. All of the deflections with the exception of S were not seen.

The pulse in newborns was regular, as shown by electrocardiograms. Sinus arrhythmia was not complete until the school age. From this time until puberty it occurred in about fifty per cent. of normal children. By measurement of the P-R and R-T intervals the transmission time could be accurately studied. The average P-R in the newborn was 0.10 of a second; from two to five years it was 0.12 of a second, and from six to thirteen years it was 0.28 of a second. This included the Q-R-S period, which in the respective ages was from three hundredths to nine hundredths of a second. The electrocardiogram was likewise of great aid in the diagnosis of abnormal conditions. A study of twenty-two cases of congenital heart lesions, two of which came to autopsy, showed that only in cases in which the right side of the heart was involved, especially in pulmonary stenosis, was there a characteristic right ventricular preponderance. In seven of eleven drop hearts, all of which were confirmed by x ray, the ventricular complex in lead one was unusually low. Three hundred cases were studied, including those showing the exudative diathesis, decomposition hypertrophy of the heart when unassociated with heart murmur, spasmophilia, or tuberculosis of the lungs.

New York Medical Journal
INCORPORATING THE
Philadelphia Medical Journal and the Medical News
A Weekly Review of Medicine, Established 1843.

Vol. CXIII, No. 4. NEW YORK, SATURDAY, JANUARY 22, 1921. Whole No. 2199.

Original Communications

MODERN COMMENTARIES ON HIPPOCRATES.

The Pneuma and the Books of the Hippocratic Corpus.

By Jonathan Wright, M. D.,
Pleasantville, N. Y.

In approaching the question of doctrinal indications in the works of Hippocrates from the viewpoint of their historical development, I am embarrassed to find myself confronted by the question of the authenticity of the separate books. In previous articles dealing with the theory of the pneuma, I have committed myself to the belief that the dialogues of Plato and the works of Aristotle were written before many of the treatises found in the various editions of the *Hippocratic Corpus*. I find myself quite incompetent to judge, not only of the value of much which Galen has said about the subject, but especially of the value of the many paleographic, philological, and archeological arguments advanced by writers in less remote periods, from his times to our own. I have been guided chiefly by Littré as to what are the genuine and what are the spurious works, since all the works, at one time or another, by one editor or another, for one reason or another, have been ascribed to the authorship of Hippocrates II, son of Heraclides and Phænerete, supposed by most authorities to have been born in Cos about 460 B. C., but by some writers asserted to have lived at an earlier or a later time than this would indicate. The length of his life and the place of his death are involved in still greater doubt. There is hardly a treatise of them all which has not been declared of doubtful origin, and even the most commonly discredited tract has rarely a surer claim to any known successor or predecessor for its origin. Despite my own helplessness, I confess I am not always filled with implicit trust in the judgment of the great French savant, whose work, now more than three quarters of a century old, is by all odds the most trusted.

Unable to judge of the weight of many of the arguments advanced by the critics, nevertheless I have allowed myself to be influenced by those which seem to me capable of impressing the casual reader. Accepting the date 460 B. C. as that of the birth of Hippocrates, that of Plato as 430 B. C., that of Aristotle as 384 B. C., we are justified in believing that any outstanding anatomical fact known to Hippocrates, it would seem, was known also to the latter two. The acquaintance of Plato and Aristotle with the knowledge of their times and their works, which have come down to us, were so extensive and of such a character it is impossible, apparently, that it would not only have been known to them, but improbable that they would have passed it over in silence. It is not true, as we would infer from some histories of medicine, that in the genuine works of Hippocrates there is no mention of the artery in apposition to the vein. The word does occur in *Articulations,* a book undoubtedly genuine, and refers to a bloodvessel, but there is no indication of anything but a nominal differentiation from a vein. In Plato and in Aristotle, so far as I know, the name artery as indicating a bloodvessel does not occur. I do not know how to account for this. Galen says that Euryphon, a Cnidian older than Hippocrates and of course something like a hundred years before Aristotle, made the distinction, although Wellmann thinks Diocles, a contemporary of Aristotle, first made it. I cannot see much plausibility in the suggestion that where the name occurs in a genuine book like *Articulations* and in other treatises, supposed to be citations from some of the genuine books, although written perhaps by authors contemporary with Aristotle, it is the interpolation of a copyist. There is a similar difficulty, too, with the word muscle. Both artery and muscle are mentioned in books, which in no way, other than the names, refer to anything indicating a discrimination of the former from other bloodvessels or of the latter from other flesh. If we find in Aristotle no mention or no explicit discrimination between artery and vein, we cannot but believe that the Father of Medicine, much older, was also in ignorance, and that the passages in his writings containing such mention are spurious.

These three men furnish us with the most extensive and the most exhaustive (I was going to say with the only) account of the philosophical and the medical theories and facts, extant in the Greek world from the birth of Hippocrates, through the life of Plato to the death of Aristotle, and there are some facts, one would think, to which not one of them would have failed to allude, if known to him. The separation of the artery from the vein is one. I cannot see that Galen takes any account of this chronology in his discussion as to the authenticity of certain books of Hippocrates.

There are other facts which have been adduced against the validity of the only example I have here

Copyright, 1921, by A. R. Elliott Publishing Company.

introduced of this critical discussion, which since Galen's time has centered around the question of the authenticity of the separate Hippocratic treatises. As to the definition of artery and vein, I have thus far broached the subject because in the previous paper, more particularly concerned with Aristotle, we also came squarely against it in the statement of his knowledge of the ultimate bronchial divisions and the pulmonary circulation. We saw how vitally involved was his doctrine of the pneuma with the anatomical relation and the physiology of the great vessels. We must think he surely would have said more, if more had been known to him. Yet Littré can find no argument against the greater knowledge of Hippocrates.

If I have exposed sufficiently a point of valid criticism of a kind constantly met with in the writings of those who have commented on Hippocrates, I may be permitted to point out another which, on the other hand, is sometimes given more weight than it deserves in the literature of the subject. There are two kinds of men who gain recognition in scientific medicine; indeed, I suppose, in other branches of science also. In fact, the types are recognizable in walks of life which are not scientific at all, and though we are not primarily concerned with these the conventional idea of that form of group leader who tells people that which they wish to hear and are capable at once of understanding, in the way of illustration, will serve us well enough. He floats with the tide, he turns his sail to every favoring breeze, however temporary. His weather vane points, not necessarily to the horizon of truth at all, but, mindful of the opinions of his fellows, to that part of it from which the wind of popular interest is blowing. This political huckster is the type of the man of science who is concerned only with propagating selfevident truths or already widely held beliefs. He does this with an assurance that amounts often to insolence, but he founds no new ones. He is the champion of the obvious or the apparent, of the pneuma or of any prevailing fad today—it is better to let the reader fill in the name of that himself—but in his defense it should be said that he, too, has his usefulness in his profession, whatever it may be. With industry in it he reaches the summit of that kind of ambition which he has been able, from his mental limitations, alone to nourish. His exhortations and dissertations are largely reflex, he thinks with his spine, the product is the reflection of the mass in which he is immersed. From such an individual issued some of the books of the *Hippocratic Corpus.*

On the contrary, in others, however far from the truth we may know the author to be, we note Hippocrates carefully, painfully, modestly weighing the evidence pro and con—experience is misleading and judgment difficult—the doubt which bespeaks the occupation of a mind too absorbed with the problems of life to exploit its commonplaces in the interest of his fame is found on every page. Not by any means on every page, but now and again we get a flash of light that shines across the ages. The good the other man does lies buried with his bones. We meet him so often in the *Hippocratic Corpus* only because some Alexandrian captain of marine industry has foisted his writings on the librarian by bluff as the work of the great Hippocrates (6).

Now it is quite impossible for the diligent and intelligent reader, as the work of Hippocrates is transmitted to us, not to be struck with thoughts like these, but he should beware of setting them up as a canon of criticism. They but reflect his own limitations. I have not infrequently seen some of the aphorisms of Hippocrates lauded to the skies by men whose common sense I am occasionally compelled to respect, which I regard as an insult offered to the understanding of the Father of Medicine, either as a physician or as a man of sense, but I recall how often I have had occasion on the other hand to think a thing pretty good which a critic, vastly more learned than I, considered beneath the intellectual powers of Hippocrates himself. Nevertheless, it is a fact that in most of the books, which from other internal and external reasons are supposed to be genuine, we find the theory of the pneuma and the theory of the humors but casually mentioned and cautiously applied, or, as in *Ancient Medicine,* subjected to a raking criticism which must have seemed cranky and perverse to the good mixer who wrote the *Winds* or the *Humors.*

I sometimes wonder if this wide extended heterogeneity is not responsible for some of the fame of Hippocrates. It appeals by virtue of it not only to the man of science but to the man of the street, not only to the philosopher but to the fool, not only to the selfcontained philosopher but to him whose sphere of usefulness is the propagation of the work of more original men. Every advance in knowledge which can, by popular agitation, be impressed on the people owing to the simplicity in the processes of thought involved, to the earnestness with which it is urged, or to the manifest advantages derivable from its application, is sure, because of these things, to pass through an epoch of gross exaggeration and distortion, both in discussion and in the deductions made from it. The application of the latter in practice is usually carried to ridiculous extremes, as it doubtless was at Athens when Aristophanes was writing *The Clouds.* Oblivion and neglect of the kernels of truth such a fad often contains are then the regrettable consequences of this hotbed forcing of a medical belief, based on halfbaked theory and insecure facts, and urged with all the arrogance of those who derive their beliefs from the authority of others rather than from their own resources of thought and action.

Let the reader turn to the tract on the *Winds* or the *Pneuma*—the winds without, the pneuma within the body. Its subject is the fresh air fad of Athens in the time of Hippocrates, having been ascribed to Diogenes Apollonius, or, perhaps, if at a later period, it may have been written in that era of Alexandrian research when the great wave of new facts was sweeping over the world of ancient philosophy and annihilating its poise of intellect. From what I have said above the reader will easily understand why no critic loyal to the art is eager to fasten the authorship of it on the Father of Medicine.

"All maladies are of the same nature; they differ only in their location. . . . However, there is never but one form and the cause is always the same. . . . I am going to show that all diseases have their origin and proceed from (the pneuma) . . . fever . . . inflammation . . . colic . . . bellyache . . . all are caused by the passage of the pneuma . . . flux not only of the bowels but of the lungs—hemoptysis . . . ruptures . . . dropsy . . . apoplexy . . . epilepsy —in fact the winds are the chief factors in all diseases"—the air outside the body—the pneuma within.

That is the skeleton outline of an obsession which, I suspect, followed the study of aerial phenomena successive to the demonstration by Empedocles of the materialistic nature of the air. I conjecture this book, though not by Hippocrates himself, may have been of the Hippocratic era because the theory of the scientists of the Nature Philosophy was impressed at this time on the fickle and fun loving Athenians by Anaxagoras, and probably by Diogenes Apollonius, both of whom seem to have incurred the animosity of the people. How much of this was an outcome of, or how much resulted in, the savage ridicule Aristophanes cast upon Socrates and the sophists we can only conjecture. We see him making fun of the vortex of the atomic theory specifically. The air monism of Anaximines we see exciting his ridicule, but it was misdirected when applied to Socrates, who in Plato's portrayal, himself jeers at Anaxagoras and Heraclitus. Socrates was pilloried by Aristophanes in the *Clouds* or hung as near them as possible on a high wall on the stage, sniffing the pure air, and he as well as all the players were endowed with long noses so they could sniff up as much of it as possible.

A generation ago a daily paper in New York, with large headlines, in jovial humor, drew attention to the inference to be drawn from the enthusiasm of a young medical author who had pointed out the filtering and warming and moistening of the inspired air in the physiology of nasal respiration. The wit of the press relieved the tedium of scientific argument by discoursing on the advantages of having a long nose. Doubtless the reporter was innocent of any knowledge of Aristophanes's old joke, but he anticipated by a decade or so that era of faddism on the subject of fresh air which has suffused popular science since, and which has to some extent obfuscated that of the hierarchy of science itself. To some such era as this I am disposed to think we may venture to ascribe the publication or the composition of this Hippocratic book on the *Winds*. The author evidently had to meet some criticisms as to the morbid manifestations of the pneuma. "Why," they will ask me, perhaps, "are not all animals affected by it? Why do these diseases attack one case?" "Because," I would reply, "body differs from body, one kind of nature from another, one kind of food from another. For the same things are neither always alike suitable or harmful to every kind of an animal; some work well, some work evil." Introducing thus a host of additional etiological factors he seems unaware of them. That one thing, the pneuma, dominates his whole mentality. He uses a word familiar to us, but he does not even think of bacteria: "When the air is infected with miasms, which are hostile to mankind, men become sick." Then, becoming embarrassed, how natural it is to find him taking refuge in mere tautology. "When, on the contrary, the air is unsuitable to some particular kind of animal, it is that kind of beast which is struck." The profundity of this remark is quite modern as well. It is a sense of humor that is lacking in us when we talk like that.

The Régimen in Acute Disease is attributed both by Galen and by Littré to Hippocrates, but the appendix, according to both, is by a later and a weaker hand. In it we find in several places a reference to an etiology which includes the stoppage of the air in the veins. Some disorder of the humors, some lack of equilibrium, perhaps, in their qualities or quantities, is the prime factor which works on the system through interference with the pneuma. In *The Sacred Disease,* not usually ascribed to Hippocrates himself, though Adams includes it among the genuine works, but evidently if not his the work of a disciple better grounded in anatomy, we get a conception which is in the direct line of inheritance from the one in the Papyros Ebers. "By the veins we take in the greater part of the air, for they, too, are the breath organs of our body, which carry into us the air. They distribute it everywhere by means of the little veins, then they exhale it, having thus brought invigoration." This I think is undoubtedly a trace of the doctrine of the transpiration through the skin which we find elaborated in one of the fragments of Empedocles, but I do not know why Wellmann should attribute to the latter the statement that epilepsy arises from a change in the winds. To Alcmæon we with better reason may attribute the teaching insisted on in this book that the brain is the seat of the intelligence. We may see in these things the influence of the Sicilian School, but it is made extremely doubtful by Littré that this tractate is to be considered as coming from the hand of Hippocrates himself. It is not at all sure from anything we can find in those books, more surely genuine, that he actually shared this idea of Alcmæon about the brain, though he did undoubtedly share in the conception of Alcmæon's which looks upon disease as a loss of that equilibrium in the elements which obtains in health. This very popular idea was associated with that of beauty or symmetry of form not only by Plato but by the Stoics and many centuries afterward by Galen. It had such a wide affiliation with geometry and the science of number and with the fundamental tenets of the Greek theory of art that we are scarcely warranted in thinking of Alcmæon or of any other Greek, however early, as originating it, but we cannot yet trace further back than Alcmæon the correct notion as to the function of the brain. We may suspect the simile of an equilibrium as the state of health came like the pneuma from Egypt but not the localization of the cerebral functions in the brain.

In the *Nature of Man,* one of the spurious Hippocratic books, according to Littré, we again find a statement which implicates both the pneumatic and the humoral theories in the explanation of diseases which "come, some from the diet and the manner of the diet, others from the air,"—from the latter those diseases we call "epidemic." To this word in the Greek no suspicion of infection or contagion as yet attaches. It was a loose term equivalent to the prevailing diseases. The *II Epidemics,* which seems to be made up from extracts from other books in the Corpus, some genuine, some spurious, and the *Aliment,* with which I have dealt elsewhere, speak of the air as a food. Littré's comment on this is that this conception involves that of variations in the air giving rise to disease as do variations of the food in the digestive tract, the air acting on the respiratory passages and upon the blood vessels, both of which take it in. In the book on the *Nature of the Bones,* and also in the little tract on the *Heart,* we get further hints of an anatomy originating with that of the *Papyros Ebers,* but nevertheless in both books we perceive a decided advance over the anatomy of the supposed genuine books of Hippocrates. In the latter there is a similarity in the conception to that adopted by Aristotle.

* * * * * * *

In résumé of the series of essays in which this belongs, I may say I have drawn attention (1) to the ideas of that typical primitive group who stood around the dying savage. In every ethnic origin that scene was enacted, and the impressions made on the mind of man became the possession of them all. It was the breath which was the animating soul of man. It led the materialistic Egyptians (2), the more or less direct heirs and to a large extent the descendants of the African tribes with whom they had always been in contact, to the conclusion that the pneuma, in order to accomplish its mission, must penetrate to the uttermost ramifications of structure in the animal framework. As there were demonstrably channels through the nostrils and buccal cavity to the chest, so these channels and their communicating branches must lead the pneuma to the contracting finger or the marching foot, to the beating heart and the gastrointestinal tract, rumbling in the abdominal cavity. The mummy maker found many channels: the trachea, the bloodvessels; many cavities: the heart, the bladder; many tubes: the hepatic, the renal, the openings of the nasopharynx, through one of which passes the breath of life and through the other the breath of death; the anus, through which passed the flatus and the feces. You could feel the pneuma beating in the heart and in the bloodvessels wherever the hand was laid on them. You could hear it in the borborygmi of the stomach and bowels, and in the respiratory sounds.

We are at the present time more able than formerly to be assured how these thoughts were exchanged throughout the civilizations which bordered the Mediterranean Sea. Plato and Solon traded in oil with Egypt; Pythagoras, Herodotus and Democritus, and many others, travelled there. Political exiles fled across the sea from one continent to the other. Prehistoric commerce and conquest evidently went on for thousands of years before Hecatæus wrote, and before the pages of Herodotus were filled with the Greek characters which have been preserved for us. It is supposed by some that the *Berlin Papyrus,* a transcript of notes from the Ebers manuscript, and others, was known to Galen. The anatomical learning, which was stored beneath the feet of the god Anubis five or six thousand years ago, surely passed into the Greek world, and the germs of philosophy, already alive in the more ancient civilizations, were the inheritance of the nature philosophers on the Asiatic shores and the Ægean Islands. The enormous expansion these received from the later Greeks has been the wonder of the world ever since. Out of the Egyptian fermentations grew many ideas found in the Homeric poems. The Poem of Gilgamesh, incalculably older, the Rig Veda, perhaps contemporary, the Zend Avesta, all contributed their fructifying waters to the ocean of human thought spread out in the annals of the golden age of Greece. We have found (3) in the Iliad and the Odyssey that conception of the soul, which is identified with the air or the pneuma and which is essentially that of primitive man. We have seen it appearing under modified forms here in several of the later books of the Hippocratic collection, and we have also seen it idealized[1] by Plato (4) and accepted by Aristotle (5).

In broad outlines they all led naturally to the evolution of the two leading doctrines which dominated the science of medicine for thousands of years, but Hippocrates the Great was not led away from realities by them. Both pneumatist and humoralist theories survived the pressure of new anatomical facts, revealed by the Alexandrians, for more than fifteen hundred years. It necessitated another onslaught of anatomical revelations slowly and surely to banish these particular blights of theory, in their ancient aspects, from the path of progress, but they still can be found under other forms hidden in modern theory, yet not in theories alone as obstruction to new knowledge, but as founded on facts, valid, as we believe.

BIBLIOGRAPHY.

In the preparation of this paper the following sources were used for reference to the works of:

HIPPOCRATES: The translations of Francis Adams: *Hippocrates, Genuine Works;* E'Littré: *Hippocrates, Oeuvres Complètes.*

GALEN: *Claudii Galeni Opera Omnia* (Kühn).

ARISTOTLE: *History of Animals* (tr. Bohn); *Treatises,* translated by Thomas Taylor, 1805.

REFERENCES.

1. Blood and the Soul. NEW YORK MEDICAL JOURNAL, July 20, August 10 and 17, 1919.

2. The Blight of Theory. *Ibid,* December 7, 1918.

3. The Theory of the Pneuma in Homer. *Ibid,* May 22, 1920.

4. The Anatomical and Physiological Theories of Plato. *Ibid,* July 3, 1920.

5. The Theory of the Pneuma in Aristotle. *Ibid,* November 27, 1920.

6. Modern Commentaries on Hippocrates. *Ibid,* December 13, 1919.

---

[1] We know of Plato's tripartite division of the soul. In the *Iatros,* doubtless wrongly ascribed to Galen, the pneuma may be found split in three divisions likewise.

THE MODERN TREATMENT OF ACNE.

By Walter J. Highman, M. D.,
New York.

Until recent years acne has been one of the most baffling skin disturbances to treat, and at the same time one of the most serious to leave unimproved. This does not imply that the condition is organically grave, but it is prone to attack young individuals during the age of courtship and, because it is so disfiguring, it throws upon the sufferer an unwholesome burden of selfconsciousness. Therefore, from the viewpoint of human psychology, it constitutes a handicap far in excess of the trivial organic damage it does. Its effects accomplish this during its active stage, and it is particularly disadvantageous to young women, often inducing in them a state of mind approaching melancholia. After the active phase is over, the permanent damage done to the skin is sufficient to perpetuate in a mild degree the mental suffering occasioned during its earlier stages. Therefore, the problem of treating acne is important, not only because an organic disease must be controlled, but because a condition predisposing to subjective disturbances is presented.

Acne begins just before or during the onset of puberty, and is characterized by an increased oiliness in the skin, the formation of hyperkeratotic plugs in the follicles, and a general subtle sallowness. The plugs alluded to are called comedones, and these are the starting point of the pustules which in turn furnish a further disfiguration. Accompanying these skin changes, which are mainly present on the face, chest, and back, are scaling of the scalp, and sometimes loss of hair. Associated general manifestations are gastric indigestion, usually most pronounced as to starches and sugars, constipation, slight enlargement of the thyroid gland, coated tongue, and, depending upon the character of the individual, selfconsciousness and even melancholia. It is probable that the subjective manifestations are more likely the result of the eruption than of the underlying causes thereof.

In women the eruption often grows worse in relation to the menses. Not uncommonly an increase of sugar is found in the blood, and the gastric contents show a high percentage of acidity with markedly increased free hydrochloric acid. An analysis of the entire picture reveals the following: The skin tends to scale, the sebaceous glands enlarge and secrete excessively, and the secretion cannot drain off because the plugs in the follicles interfere.

The underlying causes of the disease are probably associated with the profound changes inherent in puberty. Inasmuch as puberty cannot be hurried or modified by treatment, the main hope of therapy lies in an attempt to alter the skin so that the predisposing features become unable to do any great damage. It is necessary, before continuing, to state that the formation of pustules is incidental, the comedones acting as foreign bodies which make it possible for the bacteria in the follicles to become active. Thus the indications for treatment are twofold: First, the prevention of comedone formation; second, the control of the underlying factors, where this is possible. Incidental indications are the treatment of the scalp and the expression of the pustules and comedones.

The general treatment consists of regulating the diet by cutting down the starch and sugar intake and by promoting intestinal function. The latter is best accomplished by eating green vegetables and stewed fruits, together with the judicious use of cathartics, if indicated. If there should be a disturbance of the internal generative organs, a condition rarely found in the young, this should be controlled. In dieting patients, however, it is extremely important to keep up the general nutrition and weight.

The most important indication in local treatment is to prevent comedone formation. If this can be accomplished, pustules will not develop and the disease will be automatically controlled, even though the predisposing causes are not, for acne cannot occur where the skin is normal and the sebaceous glands are not overactive. In former days this was done with moderate success by the use of sulphur, resorcin or salicylic acid in lotions or creams. These substances make the skin peel and tend to overcome the condition favoring acne. Today this may be accomplished more certainly and more precisely by the use of the x rays in given amounts. One Holzknecht unit applied to the face weekly, for from ten to sixteen exposures, will cure the average case of acne, and if from time to time there should be recurrences, these will yield readily to two or three exposures. The x rays work by diminishing the function of the skin glands and by diminishing exfoliation. Conservatively stated, nine cases out of ten can be cured in this fashion.

Thus it is possible to start treatment when acne first appears and before any real damage has been done to the skin. No local treatment is necessary at home. This eliminates the expense and the loss of time that the purchase and application of drugs involves. In other words, about six minutes weekly in a physician's office for from ten to sixteen weeks will accomplish more than older methods could ever do.

The cosmetic result is enhanced by skillful expression of the comedones and pustules, and the incidence of recurrences is reduced by the use of mild antiseptic lotions to the scalp. The employment of vaccines, so far as my experience goes, promises nothing, for, as already stated, the pustules are purely incidental and will not develop unless comedones are present. It goes without saying that the general treatment should not be neglected, for, after all, the disease is a local manifestation of a general disturbance, and more permanent results are secured by bearing this fact in mind. Nevertheless, without the local disturbance, the general derangement is incapable of producing acne, so that the major indication is the treatment of the skin.

In addition to the foregoing, the patient should wash the face with a rich lather twice a day and shampoo once a week with some simple soap. Green soap is contraindicated. Recurrences take place in about one case in four, and are easy to control with two or three x ray exposures. This line of treatment was unsuccessful in only three instances out of fifty, and in one of these patients there was a marked secondary anemia. Such exceptions are indeed rare, and as compared with older methods of treatment, the precise one outlined removes acne from the group of the serious disturbances of youth.

780 Madison Avenue.

BACKACHE DUE TO NEUROLOGICAL CONDITIONS.*

By Charles Rosenheck, M. D.,
New York,
Neurologist to the Hospital for Deformities and Joint Diseases, New York, and the New York Diagnostic Clinics.

Backache as a distinct neurological manifestation holds a subsidiary place in neurological affections. On account of the anatomical proximity of the back muscles to the spinal cord the natural presumption would be that this symptom would at once obtrude itself in the clinical picture as a major symptom. The contrary, however, seems to be the case. An analysis of the functions of the spinal axis readily explains this seeming paradox. Its activities, both motor and sensory, are in the main projected at a distance from its anatomical location. Pain as a syndrome of sensory disturbance is therefore propagated along distal pathways, although the situation of the anatomicopathological lesion is proximally located. One must not, however, accept this rule as a finality. Distinct anatomical differentiation is an essential which is not to be ignored in our analysis of the pain syndrome; for it is a fact known to the veriest tyro in medicine that an implication of the posterior spinal root or its ganglia is necessary to propagate the painful sensation to distant anatomical parts. A different view, however, is permissible when the dural covering alone is involved.

As far as clinical and experimental data are available, pathological processes here do not call forth painful sensations at a distance. On the contrary, the immediate anatomical structures reveal the effect of dural disease; hence we find as a major symptom of spinal meningeal affections, severe and persistent pain in the musculature of the back. Backache as a symptom in diseases of the spinal cord has evidently been treated rather lightly by medical writers; for in a thorough search of the available literature I was able to find only two articles on the subject which approached it from the viewpoint of the neurologist. These were by Langdon and Neustadter, who built up their clinical neurological picture on the patient's chief complaint of backache. One can readily appreciate why this symptom has escaped the attention of our voluminous medical writers. After all, it is only a minor complaint and is readily submerged in the far more striking picture of gross motor and sensory disturbances. These defects are more distressing to the patient and wholly dominate the clinical picture.

Incidence.—In an analysis of the clinically recognizable affections of the cerebrospinal axis, taken from the standard textbooks of Starr, Gowers, Oppenheim, Osler, Déjérine, Strumpell and Von Leube, backache as a symptom occurs in thirty per cent. of all neurological conditions. This is surely not an imposing figure. Obviously it could be increased greatly if we were to limit our analysis to affections of the cord *per se*. Under this scrutiny we will find this symptom as a subjective complaint, in all affections of the spinal axis where we can definitely establish the etiological relation to hemorrhage, acute inflammatory disease, and new growths. Here again the necessity of reiterating that it plays a subsidiary rôle in the symptomatology is permissible. It is the gross motor and sensory manifestations in these affections that at all times control the clinical scene.

Etiology.—The etiological factors involved in the causation of backaches in neurological affections is to be looked for in those morbid processes which at once affect the integrity of the dural covering and the dorsal roots. In the main these are to be found in acute or subacute infections of the meninges, hemorrhage in the cord substance or its dural covering, and neoplastic processes. Degenerative diseases of the spinal cord may cause backache, but the pain in these affections is insignificant and must be explained more on the ground of interference with the patient's motor activities. Inflammatory processes in the dorsal roots and ganglia which manifest themselves clinically as herpes zoster will quite often be preceded by severe back pains.

Traumatic neuroses and neurasthenia are particularly prolific in producing painful and persistent backache and are worthy of special mention. The underlying pathology in these affections is quite obscure and has been the subject of much controversy. Under traumatic neuroses, the railway spine of the older writers, notably Erichsen, held full sway. This observer regarded the condition as the result of inflammation of the meninges and cord. Walton and J. J. Putnam were the first, however, to recognize the functional nature of many of the cases. To Westphal and his pupils we owe the name traumatic neurosis (Osler). Quite recently the appellation traumasthenia has crept into the literature and this to my mind aptly describes the condition. It is not an exaggeration of fact to say that in contrast to the insignificant rôle that backache plays in organic affections of the nervous system, the contrary holds true in the traumatic neuroses. It is easily the major presenting subjective symptom in a great number of cases. The underlying etiology varies with the individual case, but in the main trauma and the resultant shock to the nervous system are the factors involved. Of course great caution must be exercised in insisting on the functional nature of a given case, for trauma and shock can be so severe as to seriously compromise the integrity of the cord and meninges. Organic changes are the inevitable results and our interpretation of the resulting sensory and motor phenomena must be considered in the light of anatomicopathological disturbances. The backache of neurasthenia has been observed by clinicians since time out of mind and the well known spinal irritability of the older writers has definitely put a stamp on this affection to the present day. The etiology of this back pain, apart from the ever fascinating theory of chemicophysical changes in the spinal cord, is most likely due to a generalized neuromuscular fatigue.

---

*Read at a meeting of the New York Physicians' Association, November 23, 1920.

Pathology.—The pathological processes which cause back pain obviously vary and are determined by the underlying conditions. Broadly speaking, these are hemorrhage, inflammatory affections and new growths. Any one of these morbid states can readily affect the integrity of the dural membranes, spinal roots or ganglia. In simpler terms, pressure phenomena or inflammatory reactions in the spinal axis are responsible for the pathology of back pains. It is unnecessary to dwell at length on the histopathology governing these processes. They are selfexplanatory and need no further elucidation.

Neurological conditions producing backache as a symptom.—In order that this symptom may receive its proper evaluation it will be necessary to enumerate again the morbid processes affecting the spinal axis in which back pain is a subjective complaint. These in the main are acute and subacute inflammatory diseases, hemorrhage, new growths, degenerative diseases and the neuroses. The diseases of the nervous system which owe their development to these initial pathological disturbances will then be enumerated under their respective headings.

ACUTE INFLAMMATORY DISEASES.

Epidemic cerebrospinal meningitis.—The backache in this affection very often ushers in the disease. It is indeed a major complaint in a great number of cases as long as consciousness is present. Its severity is evident by the plasterlike rigidity which envelops the entire spinal musculature. This rigidity lasts throughout the disease and all spinal mobility is practically abolished, the slightest movement of the spine, either spontaneous or induced, increasing the spasm and pain to a marked degree. The pain has no localizing characteristics, but is diffuse, embracing the muscles in proximity to the entire vertebral column. The sufferer describes it as gnawing and boring, as if the entire back would be broken by the very violence of the pain.

Acute and chronic myelitis of the cord.—In the acute stage of this affection, with involvement of the dura mater in the inflammatory process, pain in the back is a prominent subjective complaint. It comes on early in the disease, but it does not persist; with the appearance of the paralytic phenomena the back pains usually subside. The localization of the pain depends on the anatomical location of the infectious process. This may occur either in the cervical, dorsal, or lumbosacral regions of the cord. In cases of ascending or diffuse myelitis, the subjective discomfort may involve the entire back. The pain in these myelitic conditions is usually described as burning. In two cases observed personally the patients complained bitterly of an intense paresthesia in the back muscles which shifted from segment to segment. After the subsidence of the acute stage, and when the myelitis passes into the chronic phase of the disease, all back pains usually disappear.

Landry's paralysis.—Backache in this affection is apparently not a constant symptom, if one closely analyzes the clinical description of the disease. Some authors have dwelt with particular emphasis on the severe diffuse boring and burning pains in the muscles of the back and along the vertebral column. Other authors have apparently not observed this symptom or have ignored it in the description of their cases. Von Leube observed one case in which the pain along the vertebral column was most intense when the patient sat up. On lying down the pain disappeared completely. Vigorous pressure over the spinal muscles also failed to elicit any discomfort. The chaotic and varying pathology of the disease may possibly explain the inconstant presence of this subjective symptom.

Acute poliomyelitis.—In the severe types of this affection with dural involvement the backache is very severe and persistent and assumes the characteristics of the pains in cerebrospinal meningitis. They may be coincident with the onset of the infection or may precede it for a number of days. The spinal muscles are held rigidly, all movements, either volitional or induced, intensifying the distress. The pains persist throughout the acute phase of the disease and subside with the onset of the paralytic phenomena. This is not constant, however, for in a considerable number of cases observed in the epidemic of 1916 the spinal rigidity and pain persisted months after the development of the paralysis. Evidently a subacute pachymeningitis was responsible for the persistence of the symptoms. The back pains, as described by mature patients, are diffuse, boring, and tearing, with a subjective sense of tremendous weight and pressure. In mild cases of poliomyelitis there is as a rule no complaint of backache. A vague sense of discomfort diffused over the entire back has been observed in the moderately severe cases of this disease.

Herpes zoster.—Severe and persistent pains in the back will in a great majority of cases herald the advent of this affection. The pain is sharply localized and is in approximate relation to the involved posterior root and its ganglion. It is described as gnawing and burning in character. With the appearance of the herpetic vesicles, the pains assume a radiating character and are definitely marked by the anatomical distribution of the intercostal nerves. It is well to bear in mind the possibility of a zoster infection in a sharply localized pain with sudden onset limited to the spinal musculature. A special characteristic of herpes zoster pains are their persistence long after the disappearance of the vesicles. They assume a definite neuralgic character which may affect the back or sides of the thorax or trunk with equal persistency.

HEMORRHAGE.

Hemorrhage affecting the spinal meninges (hematorrhachis) is associated with backache of the most violent kind. The extravasation of blood may occur either in the epidural or subdural space. As soon as the bleeding occurs the irritative phenomena assert themselves almost at once. There is excruciating pain sharply localized and in approximate relation to the site of the hemorrhage. This localization does not persist, however. As the blood gravitates in the dural sac the pains travel downward and eventually involve all of the spine below the point of bleeding. The back muscles become very rigid and pressure or movement increases the distress a great deal. The pains persist with varying intensity for a considerable period after the hemorrhage has ceased. With the absorption of the clot they gradually diminish in severity and eventually disappear. It is well to mention here that in large hemorrhages—the socalled spinal apoplexy—the back pains may at once assume a radiating character, due to pressure on the posterior roots. This radiation is a late symptom in the majority of cases, and appears usually with the onset of the paralytic phase of the affection.

Hemorrhage into the cord substance (hematomyelia), if extensive, may produce backache as the result of lateral distention of the cord with consequent pressure on the dural covering and the posterior roots. The pain is of sudden onset, becomes sharply localized, and is in approximate relation to the site of the hemorrhage. This back pain, however, is of a fleeting character, soon to be followed by the onset of the paralysis. In most cases of hemorrhage into the cord substance the initial pain is absent. It is the paralytic phenomena that at once present themselves.

VASCULAR DISTURBANCES.

Hyperemia of the cord as a cause of backache was a common diagnosis and in great favor with the clinicians of the past. They evidently attempted to give a pathological status to the great and ill defined mass of back pains occurring in the various neuroses and toxemias. In the light of modern pathology the diagnosis of hyperemia of the cord belongs more to the realm of fancy than to fact. As a cause of backache, therefore, it may be left out of consideration.

Intermittent claudication.—A number of authors, notably Déjérine, have described this condition as affecting the spinal arteries. On this basis he has described a syndrome characterized by severe lumbosacral pain with transient sensory and motor disturbances affecting the lower extremities. An analysis of this affection has led him to believe that an angiospasm of the blood vessels supplying the lumbar enlargement is responsible for the symptomatology. In a patient with marked evidences of arteriosclerosis, I was able to confirm Déjérine's observations. The onset was quite sudden with a marked sense of weight over the lumbosacral area. This lasted for a short time and was quickly followed by paresthesia and marked weakness in both lower extremities. There were no pathological reflexes present as observed by Déjérine and others. The deep reflexes, however, were markedly increased and an exhaustible ankle clonus was easily elicited. The sensory and motor disturbance disappeared completely in twenty-four hours, but a vague sense of pressure and discomfort persisted in the lower portion of the spine for about ten days. No doubt a great number of back pains that suddenly incapacitate the aged are probably due to the temporary vascular constriction of the spinal arterial supply.

VASCULAR ABNORMALITIES.

The rare possibility of enlargement of the spinal veins in relation to unexplained backache is to be borne in mind. Krause, Gaupp, Jumentie, Valensie, Lindeman and Elsberg (quoted by Elsberg) have described the clinical and surgical aspects of these cases. Obviously they have dwelt in the main on the broader symptomatology of the gross sensory and motor disturbances, which the enlarged veins produce. These vascular abnormalities give the clinical picture of new growths of the cord with all their attendant pressure effects. The character of the back pains, therefore, is to be interpreted from that viewpoint and merit no special description.

NEW GROWTHS.

In a considerable number of tumors of the cord, particularly those of the extradural or intradural type, backache may be an early subjective complaint. The character of the pains can be described as boring, burning, or a vague sense of pressure. Its localization depends on the site of the tumor mass. Thus it may be in the cervical, cervicodorsal, dorsolumbar or lumbosacral region of the spine. The localization of the pain does not last very long, however. As the neoplastic process spreads and an invasion of the posterior root or its ganglion results, the pains become diffuse and radiating in character. Eventually they are sharply limited to the segments involved. The nature of the pains in spinal cord tumors (the dural variety) are their severity and persistence throughout the course of the disease. The onset of paralytic phenomena does not mitigate the patient's sufferings. Relief is obtained only by death or operative interference.

In the intramedullary type of tumor we hardly ever encounter the subjective symptom of back pains. It may be observed, however, as a late symptom long after the development of the paralysis. This is to be explained by the invasion of the posterior roots and meninges, the inevitable result of extension of the tumor mass. The characteristics of these pains have been dwelt upon under the dural types of tumors, and need no further description.

NEUROSYPHILIS.

Under neoplastic processes we may well include syphilitic affections of the cord and meninges. These gummatous exudates readily assume the characteristics of tumors with all their pressure effects. Thus the localized or diffuse types of meningomyelitis may be ushered into clinical being by the advent of severe back pains. These pains have certain features that merit special description. They come on insidiously and may involve the entire musculature of the back. At times the pain is sharply localized and then again may shift about and eventually become diffuse. The distress is increased by pressure or movement of the spine. Rigidity of the muscles is not uncommon, and in some cases is quite marked.

Pachymeningitis cervicalis hypertrophica. — In this affection we are also dealing with a neoplastic process which exerts marked pressure effects on the dural covering of the cord. As a result pain in the cervical region is a very early symptom. The pain is sharply localized and is characterized by its severity and persistence. It may be described as boring or pressing. Two patients under my care, who were carefully interrogated on this point, described the pain as a combination of pressure and paresthesia. The muscles in the cervical area may be quite rigid and sensitive to pressure. The localization of the pain lasts a variable period and is followed by the usual radiating character of pain, indicating involvement of the posterior roots. It seems opportune at this point to emphasize the fact that the pain in neoplastic processes of the cord and meninges is not at all times limited to the back. With the increase in growth of the tumor mass and inevitable invasion of the ganglia and posterior roots, the pains assume a definite radiating character. It is quite obvious that this radiating pain may be the very first subjective complaint whenever pathological processes invade primarily the posterior roots.

DEGENERATIVE DISEASES.

Tabes dorsalis may initiate its clinical appearance with a persistent pain in the back. This is not permanent nor characteristic. As we are dealing in this affection with a primary radiculitis, the pains early assume a distal character. Thus the radiating or lightning pain has been recognized as an intimate associate of this disease for a great number of years. It dominates the clinical picture from its inception and definitely stamps the affection.

Paralysis agitans, combined sclerosis, multiple sclerosis, and the various types of secondary tract degenerations, may at some time during their onset or course of development be the subject of pain in the musculature of the back. This discomfort is more readily explained by the fixed attitudes which the patient has to assume in getting about. The mechanical difficulties of locomotion add great burdens to the spinal muscles which conduce to their fatigue and discomfort. As this backache has no pathological significance, its further description seems unnecessary.

NEUROSES.

In traumasthenia and neurasthenia, backache holds the centre of the clinical stage. Its essential features have been mentioned under the chapter on etiology. The clinical importance of this subjective complaint may be considered from the effect that it has on the patient's morale and its defiance to all accepted methods of treatment. Its economic importance claims even greater consideration, for we are all familiar with the impaired working capacity of the affected individual.

In considering the backache of traumasthenia we find that it follows soon after the primary effect of the injury has passed away. The pain may be diffuse or localized to the lower lumbar area. In the majority of cases the lumbar type of pain is manifest. The distress is constant and increased by all physical effort. It is described as a sense of weight and pressure, and there are areas of extreme tenderness to pressure. Rest has little if any influence in alleviating the pain. It may also assume a lancinating character associated with moderate paresthesia.

The backache of neurasthenia is a backache of adjectives, as one author has facetiously named it. It holds the patient in a relentless clutch and is usually increased by mental or physical effort. It may be localized to any portion of the spine, but as a rule involves the dorsolumbar muscles. Rest may mitigate the distress, but not to any appreciable degree. As heretofore stated, it is a pain particularly rich in adjectives, and its embellishment is limited only by the literary ability of the sufferer. The chief characteristics of this back pain may be summed up as follows: Persistent and diffuse character of pain; early fatigue of back muscles after physical or mental effort; marked points of tenderness over muscle segments, and evident emotional instability.

DIAGNOSIS.

As backache is only a symptom of a particular morbid process, it would be a manifest fatuity to speak of the diagnosis of a symptom. Obviously when a patient complains solely of back pain the most thorough inquiry and examination should be instituted, in order to discover the cause of it. A perfunctory glance and a bottle of liniment is a bit unscientific and rarely brings results. A frank neurological affection may be menacing the patient, and its diagnosis should be established as soon as possible, for I have observed irreparable injury to the spinal axis in cases where this humble symptom was the only complaint. It is obviously hazardous to attempt a diagnosis of the underlying condition by the peculiarities of each backache. In acute conditions it may be a very simple matter when other associated symptoms are apparent; but in chronic backache, all the descriptive powers of the patient will not make the diagnosis for us. It may aid considerably in giving this symptom its proper evaluation and guide us in arriving at a definite conclusion. The practitioner must always bear in mind that it is only a symptom of an underlying disorder, which painstaking examination will reveal to him.

TREATMENT.

The treatment of backache in neurological diseases is obviously the treatment of the underlying condition producing the disturbance. It is not the purpose of this article to dwell at length on the methods to be pursued in each given case. They will readily suggest themselves to the intelligent practitioner as soon as he views his cases in their proper perspective. Above all, he should avoid treating backache by symptomatic means. In the main the treatment will be directed by a combination of methods which will take into consideration the primary morbid process and the evils that flow therefrom.

370 Central Park West.

A Comparative Study of the Mechanism of Wound Healing.—Leo Loeb (*Journal of Medical Research,* January, 1920) attempts to explain on a theoretical basis the various phenomena observed during the healing of wounds. It is stated by Loeb that the reactions seen in wound healing are to be considered essentially as reactions of cells toward foreign bodies.

GYNECOLOGICAL BACKACHE.*

By E. A. Bullard, M.D., F.A.C.S.,
New York,
Assistant Surgeon, Woman's Hospital

A small volume might be written about backache if this symptom was studied exhaustively from every viewpoint, and a most interesting and instructive treatise it would be. Probably the longest chapter should be written by the orthopedist, but the gynecologist, neurologist and internist could contribute much interesting material, and so interdependent should these be that the authors would do well to consult each other freely in the preparation of their respective monographs.

Some surprising observations made in the postoperative followup clinic at the Woman's Hospital during the past few years led me to feel that an analytical study of backache would be interesting.

There is a justifiable scepticism of statistics. Contentions of every sort have been backed up by statistics at one time or another, but I am not trying to prove anything. I wish merely to lay before you what the records show. While there is of course a certain percentage of error in these reports, I believe that the rather thorough methods now in operation at the Woman's Hospital produce approximately accurate figures of the work. Seven hundred and twenty-one cases of backache, with sufficient data for satisfactory study, were taken up in order from the records of the followup clinic since 1915 and tabulated for this analysis.

GROUP I.

Retroversion uncomplicated by any other gynecological abnormality		129 Cases
Backache cured by operation		103 Cases
Gilliam operation	34	
Bissell operation	16	
Simpson operation	14	
Internal Alexander	13	
Grad	13	
Miscellaneous operations	13	
Backache unrelieved by operation		26 Cases
Simpson operation	4	
Gilliam operation	4	
Bissell operation	4	
Ventral suspension	2	
Round ligament plication	8	
Miscellaneous	4	

These latter cases were anatomically successful and nothing remained to explain the failure.

This, then, is a series in which the backache might reasonably have been ascribed to the displaced uterus, but end results virtually proved that twenty per cent. of these backaches were not from that cause, and were almost certainly not gynecological.

GROUP II.

Retroversion with adnexal inflammation	68 Cases
Backache cured by operation	59 Cases
Backache unrelieved by operation	9 Cases

Anatomically satisfactory retroversion operations with salpingectomy were performed, and no tenderness or induration remained to account for the continuation of the pain.

Here we found elimination of the pressure of an adherent uterus or a tuboovarian mass, or relieving the drag of adhesions seemed to cure eighty-seven per cent. of the backaches, leaving thirteen per cent. probably not pelvic, but not diagnosed.

GROUP III.

Adnexal inflammation only	19 Cases

The results here seem to justify the opinion that salpingitis with adhesions produces backache, for all but two of this group were cured by ablation of inflamed tubes—and sometimes the ovaries—and the release of adhesions. About ninety per cent. were cured.

GROUP IV.

Uterine prolapse (of various degrees)		84 Cases
Backache cured by operation		75 Cases
Various ligament operations for first degree prolapse	23	
Watkins operation	20	
Mayo operation	14	
Bissell trisection uterus	3	
Abdominal hysterectomy	3	
Vaginal hysterectomy with Bissell cystocele operation	3	
Miscellaneous operations	9	
Backache unrelieved by operation		9 Cases
Goffe operation	2	
Baldwin operation	1	
Watkins operation	1	
Bissell trisection uterus	1	
Mayo operation	1	
Vaginal plastic operations with round ligament operation	3	

Operation was anatomically satisfactory and no pelvic lesions found to explain continued pain.

In this important series we found eighty-nine per cent. of the cases relieved by operation, the backaches probably having been due to the drag on pelvic supports and therefore cured by successful anatomical repairs.

GROUP V.

Plastic operations only		46 Cases
Uncomplicated rectocele		9 Cases
Cures	5	
Failures in spite of successful plastic operation	4	
Cystocele and rectocele (without prolapse)		12 Cases
Backache cured	6	
Backache unrelieved despite satisfactory anatomical repairs	6	
Repairs of cervix and perineum		17 Cases
Backache cured	15	
Backache unrelieved though the plastic operations were well done	2	
Cervix operations		8 Cases

These operations were performed for cystic, eroded, lacerated, hypertrophied cervix or chronic endocervicitis, and the backache was cured in every case.

---

*Read at the November meeting of the New York Obstetrical Society, 1919; also before the Buffalo Academy of Medicine, May 19, 1920.

This group of plastic cases is too small from which to draw conclusions, but I present the figures.

GROUP VI.

Uncomplicated retroversion with lacerations of perineum or cervix (backache cured in every case)		23 Cases
Gilliam operation and perineorrhaphy	12	
Round ligament operation of one or another type with repair of cervix and pelvic floor	11	

GROUP VII.

Uncomplicated ovarian cyst		7 Cases
Backache cured by operation	5	
Backache unrelieved by operation	2	

GROUP VIII.

Fibromyomata uteri		38 Cases
Without adnexal inflammation, adhesions, or other complication.		
Backache cured by hysterectomy	33	
Backache unrelieved by hysterectomy	5	

GROUP IX.

Complex conditions	307 Cases

This title is used for lack of a better one. The cases all presented a combination of lesions. The classification is most unscientific, but in every case there were two or more conditions present, each of which was capable of producing a backache. Obviously, conclusions drawn from the study of such a series would be of doubtful value. An example of the type of patient put into this class would be such as this: A repair of cervix, cystocele, and pelvic floor, combined with a retroversion operation and adnexal work. To determine the cause or cure of such a woman's backache would be a hard problem. Usually, that is, in eighty-five per cent. of these patients, the backache was gynecological, for the operative procedures were successful in its relief.

Backache cured by operations	260 Cases
Backache unrelieved by operations	47 Cases

Though you have been deluged by figures and percentages, one fact has surely been apparent all through this analysis, namely, that there were a number of cases in every group in which operative results were anatomically excellent, and no gynecological abnormality remained to account for the unrelieved backache. To summarize:

Twenty per cent. of the uncomplicated retroversion cases.

Fourteen per cent. of the uncomplicated fibroids.

Thirteen per cent. of the retroversions with adnexal inflammation.

Ten per cent. of the adnexal inflammations.

Ten per cent. of the prolapse cases.

Fifteen per cent. of the large complex group.

Obviously, at least fifteen per cent. of the cases of backache that we see in the Woman's Hospital are not gynecological.

Since the early days of my work in outpatient gynecological clinics I had been impressed by the frequency of the symptom backache. Stimulated by the writings of Bradford and Lovett, Dickinson and Truslow, and others, I became more interested in this symptom and acquired the habit of referring many patients with obscure backache to clinics in internal medicine, orthopedics and neurology for further investigation. Most often it was the orthopedist who cleared up the diagnosis and the frequency of such conditions as sacroiliac joint trouble, lumbar myositis, arthritis of lumbar spine, disturbed muscle balance, flat feet, spinal curvatures, faulty attitude, etc., was interesting and instructive.

Dr. George Gray Ward, Jr., chief surgeon of the Woman's Hospital, holds a similar opinion concerning the frequency with which gynecological and orthopedic causes coëxist in the production of backache in females, and has established an orthopedic gynecological clinic at that hospital largely for diagnosis.

As I meditated on my series of cases it occurred to me that it might also be of considerable interest to gather up and classify those cases in which the more common gynecological causes of backache were present, but which I had discarded as I went along because none of the patients had ever had a backache.

SERIES I.	
Adherent retroversion with inflamed adnexa	47 Cases
SERIES II.	
Uncomplicated mobile retroversion	20 Cases
SERIES III.	
Prolapse of various degrees	20 Cases
SERIES IV.	
Procidentia	9 Cases
SERIES V.	
Complex cases (with several gynecological conditions in each case capable of producing backache)	29 Cases
Total	125 Cases

CONCLUSIONS.

1. In a series of 721 cases of backache studied at the Woman's Hospital, eighty-five per cent. were cured by an appropriate operation.

2. About fifteen per cent. of this series presenting one or more common gynecological causes of backache were not relieved of the backache by anatomically satisfactory operations.

3. Probably much more than fifteen per cent. of the backache in females is not gynecological.

4. My series suggests that fifteen or twenty per cent. of all women with retroversion, prolapse, pelvic inflammations, obstetrical lacerations, or pelvic tumors, do not have backache.

5. Closer cooperation with the orthopedist, the internist and the neurologist should enable us gynecologists better to diagnose and treat backache in women.

47 East Fifty-seventh Street.

LATENT PULMONARY TUBERCULOSIS IN ITS VARIOUS DISGUISES.

By Myer Solis-Cohen, A.B., M.D.,
Philadelphia.

Pulmonary tuberculosis one naturally associates with symptoms referable to the lungs. Its occurrence without cough and expectoration is not generally recognized, nor indeed much referred to in lectures, medical articles, and textbooks. When these symptoms are lacking, therefore, the pulmonary condition frequently fails of diagnosis, especially if the physician does not make a practice of examining the lungs of all his patients, no matter what their complaints.

I use the term latent pulmonary tuberculosis for those cases of tuberculosis of the lungs in which there is no cough. The symptoms the patients complain of are many and varied, but may be divided roughly into several groups, namely, nervous, autonomic, gastrointestinal, asthenic, rheumatic, dermatological, cardiac, menstrual, and general. As might be expected, patients without cough seldom find their way into sanatoria, and thus are not so well known to the sanatorium physicians, from whom much of our knowledge in regard to tuberculosis naturally comes. I have never seen a latent case in either of the sanatoria with which I have been connected, the cases I am reporting being found in the course of my private practice. In fact, it is the general practitioner, the neurologist, the gastroenterologist, the internist who sees these cases, and in many instances unfortunately fails to detect their tuberculous nature. The tuberculosis specialist, as a rule, meets with them only when he examines the presumably healthy members of the family of a tuberculous patient; for seldom does a patient without cough visit the office or dispensary of one who treats only tuberculosis. That many other symptoms in addition to cough, expectoration, hemoptysis, fever, and night sweats may occur in patients suffering from pulmonary tuberculosis is a matter of common knowledge, although sufficient attention or emphasis has not been given to them. But that these phenomena may be present in pulmonary tuberculosis while symptoms referable to the lungs are absent, is less generally known. Consequently the admonition to physicians to examine carefully the chest of all patients with cough, and the warning to the laity about neglecting the chronic cough, are of no avail in discovering these latent cases. Nor will but a fraction of such unrecognized cases be found among the public health morbidity records, which consequently may often be misleading.

In the absence, therefore, of much definite data in regard to this condition, which I believe to be quite widespread, I have attempted an analysis of seventy-five of my patients exhibiting pulmonary consolidation without suffering from cough. It must be remembered that the symptoms noted in each case are merely those of which the patient complained. There has been no attempt at a thorough investigation of each patient as to the presence or absence of the various symptoms, with the exception of autonomic phenomena in a number of the cases. Had they been systematically inquired for, no doubt various nervous, gastric, general, or other symptoms might have been elicited from patients who did not think to mention them. The number of patients reported as complaining of a certain symptom, therefore, merely serves as an index to the frequency that symptom is complained of, but must not be computed in an accurate or even approximate percentage.

For convenience I have grouped the symptoms under seven heads: Nervous symptoms, autonomic phenomena, gastrointestinal disturbances, pains, menstrual and other pelvic disorders, skin eruptions, and general or systemic symptoms, the last including asthenic, cardiac, and other symptoms.

Sex, age, and social condition.—Of the seventy-five patients included in this analysis twenty-four are males and fifty-one females. Four were ten years of age or younger, thirteen between eleven and twenty, twenty-nine between the ages of twenty-one and thirty, sixteen between thirty-one and fifty, seven between forty-one and fifty, and one in each of the next two decades. The age was not recorded in the rest. Forty-two were single. Five were widowed or divorced, two of whom had remarried and the second consort was living. The rest were married, the consort being alive.

Classification.—One was in the far advanced stage (according to the classification of the National Tuberculosis Association); the rest were socalled incipient or first stage cases. Three were in Turban's class two, one in his class three, and the rest in his class one.

Family history.—Thirty-two gave a family history of tuberculosis, seven a history of a long standing cough in a parent, six a history of tuberculosis in the consort, and nine a history of tuberculosis in the children. Twenty-six gave a family history of autonomic disturbance, eleven a neurotic family history, seven a family history of enlarged thyroid gland, and seven a history of alcoholism in a parent.

Factors associated with the onset of symptoms.—The chief symptoms from which the patients complained dated from an operation in five, from mental strain or grief in four, from coming to a city in four, from an illness in four, from an accident in two, from marriage in one, and from a confinement in two. They became worse after mental worries in seven, after an accident in three, after marriage in two, and after pregnancy in two.

Distribution of symptom groups.—Sixty-three of the patients complained of nervous symptoms, fifty-two of pains, fifty-one of autonomic phenomena, thirty-five of gastrointestinal disturbances, twenty-eight of menstrual disorders, sixteen of skin eruptions, and sixty-seven of asthenic, cardiac, general, and other symptoms. Three of the patients complained of symptoms in all of the seven groups, nine of symptoms in six of the groups, twenty of symptoms in five, seventeen of symptoms in four, fourteen of symptoms in three, seven of symptoms in two, and three of symptoms in but one of the groups. Each symptom under the group headings is followed by the number of patients in whom it was noted.

Nervous symptoms.—The chief nervous symptoms complained of were: Nervousness, fifty-six;

depression, twenty-four; insomnia, twenty-one; irritability, twenty-three; excitability, sixteen; restlessness, twelve; being fidgetty, eight; tremors, nine; hysteria, six; twitching, six; nervous prostration, seven; disagreeableness, five; mental tire, five; hysteria, five, and nausea or vomiting accompanying headache, six.

Less frequent were the following: Feeling of impending danger, three; sexual hyperesthesia, three; masturbation, three; phobia, three; bad behavior, three, and mental confusion, three. Occasional symptoms were, gaping, two; nightmare, two; aphonia (hysterical), two; globus hystericus, two; diarrhea when nervous, two; epilepsy, two; selfconsciousness, two; and dreams, loss of memory, stupidity, chorea, abdominal pain during electrical storm, somnambulism, stiffness in legs, "picking" in arms, itching of legs, melancholia, sighing, and vomiting when excited, each one.

Pains.—Of the pains complained of the most frequent were: Headache, thirty-one; backache, nineteen; pain in the legs, fifteen; in the precordium, twelve; in the chest, twelve; in the back of the neck, eleven; in the abdomen, eleven; in the sacroiliac joint, eleven; in the shoulder blade, five; in the supraorbital region, five; in the arm or arms, five; and in the shoulder, five. Less frequently they were in the knee, four; sternum, four; thigh, three; breast, three; hand, three; between the shoulders, three; in the ankles, three; and in the finger, three. Occasionally they were in the side of the face, two; elbow or elbows, two; ear, two; hip, two; eyes, two; below the clavicle, one; in the scalp, one; lips, one; back of the chest, one; jaw, one; pelvic region, one; epigastrium, one; feet, one; thyroid gland, one; and all over, one. Several patients complained of backache associated with nervousness, one of pain in the finger tips and nails when nervous. In several (four) the pain was worse on excitement and worry and in one case it was brought on by them. Three patients complained of pain on urination, one of pain in the end of the penis, and one of pain on coitus. Six patients complained of what they called neuralgia, one of rheumatism, and one of stiffness in the neck.

Autonomic phenomena.—The autonomic phenomena were studied more thoroughly than any other group of symptoms, because for the past fifteen years or more I have been impressed with the frequency of the phenomena of autonomic ataxia in tuberculous subjects. Those most frequently met with were dermographia, forty-four; pallor, forty-two; tricolored finger nails, thirty-seven; sweating, exclusive of night sweats, thirty; flushing, thirty; showing of sclera above or below the cornea on opening the eyes widely, twenty-four; subjective sensation of cold, twenty-three; migraine, twenty-two; raising of the eyebrows on opening the eyes widely, eighteen; bleedings, exclusive of hemoptysis, eighteen; urticaria, seventeen; the leaving of a black line when a silver probe is drawn across the face, fifteen; showing of sclera normally above or below the cornea, seventeen; feeling worse in hot weather and better in cold weather, fourteen; nosebleed, eleven; angioneurotic edema, nine; showing of sclera above or below the cornea on raising the eyebrows, nine; tendency to bleed easily, eight; numbness, eight; general burning, seven; subjective sensation of heat, seven; enervated by heat, six; worse in the winter—inability to stand the winter well or to stand cold water, six; rigor, six; prostrated by heat, six; low blood pressure, five, and hoarseness without a "cold," five.

Less frequently were noted tingling, four; unilateral burning, four; vomiting accompanying pain, four; nausea accompanying pain, three; asthma, three; hay fever, three; sweating with weakness, three; food anaphylaxis, three; and, occasionally, inability to stand constriction about the neck, two; showing of sclera above or below the cornea on fixing the eyes, three; weak voice, two; closing of the throat, one; dryness of the lips, one; throbbing of the head, one; sunstroke, one; hot flashes, one; eyes hot, one; feeling of cold water running over the body, one; nausea with weakness, one; nausea with insomnia, one; tight feeling in the head, one; desire for sweet things preceding migraine, one; great desire for food preceding migraine, one; diarrhea when tired, one; bearing extremes of weather badly, one; swelling of fingers when excited or washing clothes, one; cyanosis, one; and idiosyncrasy to quinine, one.

The thyroid gland could not be felt in twelve cases, was merely palpable in fifteen, and was slightly enlarged in eight, moderately enlarged in fourteen, and markedly enlarged in four.

Gastrointestinal symptoms.—The chief gastrointestinal symptoms complained of were nausea, nineteen; eructation, sixteen; vomiting, eleven; epigastric pressure, smothering, lump, weight or heaviness, eleven; epigastric pain, ten, occurring immediately after eating in one case, and one hour after, two hours after, and with no relation to eating in three cases each; pyrosis, nine; abdominal pain, nine; sour taste, eight; appendicitis; six; so-called nervous dyspepsia or nervous indigestion, six; heartburn, six; and distention, five. Less frequently were noted bitter taste, three; epigastric tenderness, three; pylorospasm, three; gastrointestinal attacks, three; hemorrhoids, three; blood passed by bowel, three; diarrhea, three; and, occasionally, salivation, two; cardiospasm, two; rectal prolapse, two; gastric distress, one; hyperacidity, one; abdominal pain after eating, one; abdominal pain when the stomach is empty, one; "boiling" of the stomach, one; disturbance from gas, one, and mucous colitis, one.

Pelvic symptoms.—The most common of the menstrual and pelvic disorders were dysmenorrhea, sixteen; exacerbation of other symptoms during the menstrual period, ten; irregular menstruation, ten, and menorrhagia, nine. Less common were metrorrhagia, three; increase of headache at the menstrual period, three; and, occasionally, pain or heaviness in the breast during menstruation, two; frequent menstruation, two; exacerbation of symptoms during pregnancy, one; during confinement, one, and during lactation, one; subjective sensation of cold immediately preceding menstruation, one; backache at the menstrual period, one; hemoptysis during pregnancy, one, and at the menstrual period, one; nosebleed at the menstrual period, one; scanty menstruation, one, and enlargement at the menstrual period of a bursa on the wrist, one.

General symptoms.—Of the symptoms classed as general those most frequently complained of were weakness, forty-three; tendency to tire easily, thirty-eight; being always tired, twenty-eight; malaise, twenty-five; dyspnea on exertion, twenty-six; vertigo, twenty-six; palpitation on exertion, twenty; anorexia, nineteen; loss of weight, nineteen; failure to gain weight prior to treatment, eighteen; failure to gain weight after treatment, sixteen; dyspnea, sixteen; listlessness, languor, lack of ambition, fifteen; constipation, fifteen; exhaustion, fourteen; palpitation, fourteen; sore throat or dysphagia, eleven; hemoptysis, nine; lessened appetite, nine; furunculosis, eight; fainting, seven; frequent urination, seven, and increased pulse after exercise, five.

Less frequent were drowsiness, four; acne, four; sacroiliac strain, four; xiphosternal crunching sound, four; circles under the eyes, three; carbuncles, three, and tenesmus or burning on urination, three. Occasionally were noted eczema, two; falling of the hair, two; inclination of the head to one side, two; maculopapular eruption, two; emaciation, two; precordial fluttering, one; miliaria, one; erysipelas, one; inability to void urine, one; sexual weakness, one; emissions, one; nephroptosis, one; leucorrhea when exhausted, one; abscesses, one, and a feeling of a weight on the chest, one.

The pulse and temperature were not recorded in every case. The pulse was 70 or below in one case, between 71 and 80 in eighteen cases, between 81 and 90 in eighteen cases, between 91 and 100 in seventeen cases, between 101 and 110 in eleven cases, between 111 and 120 in three cases, and between 121 and 130 in one case. There was no fever in nineteen cases, a fever of 99.5° or less in fifteen cases, between 99.6° and 100° in four cases, and between 101° and 102° in one case.

The hemoglobin was between ninety-one and one hundred per cent. in one case, between eighty-one and ninety in three cases, between seventy-one and eighty in two cases, between sixty-one and seventy in three cases, between fifty-one and sixty in four cases, and between forty-one and fifty in two cases.

Effect of treatment.—As a rule the symptoms described do not subside on symptomatic or ordinary treatment. Salicylates, aspirin, novaspirin, atophan, and oil of gaultheria frequently have no effect on the pains. Bromides control but a small proportion of the nervous symptoms, and valerian fails in about half the cases. Stomachics, as a rule, are of little benefit for the gastrointestinal symptoms. Hexamethylenamine does not relieve the urinary symptoms. Iron, arsenic, the glycerophosphates, calcium, digitalis, strychnine, sparteine, picrotoxine, atropine, and belladonna are of apparent benefit in about half the cases where they seem to be indicated. Tuberculin is seldom of value. Iodine, given by me usually as iodoform, seems to be helpful in a little over half the cases where it has been used. Preparations of the endocrine glands proved disappointing. Thyroid gland was beneficial in five out of seventeen cases, thymus gland in one out of five cases, pituitary gland in one out of four cases, and parathyroid gland and corpus luteum in none.

Proper hygiene, fresh air, good food, sufficient rest, proper exercise, hydrotherapy, and Bier's hyperemia of the lungs and bone marrow are always indicated, but alone seldom suffice to produce a cure. Some few cases seem to retain their symptoms in spite of every method of treatment. On the whole the therapeutic agents that seemed to be of most benefit were iodoform (C. P.), in doses of one eighth grain, increased gradually to a grain; iron, arsenic, strychnine, picrotoxine, digitalis, valerian, and calcium in the form of the glycerophosphate or the lactophosphate.

Discussion.—My desire is merely to record the various symptoms and phenomena that may be observed in latent pulmonary tuberculosis rather than to explain them. Many, doubtless, have no connection with the tuberculous process. It is possible that some may be produced as a direct result of the body's fight against the tubercle bacillus and its toxins. This is probably true of many of the symptoms that occur so frequently. I entertain the same view in regard to these as I expressed several years ago when discussing the signs and symptoms of autonomic disturbance occurring in all forms of pulmonary tuberculosis—latent, arrested, improving, stationary, and advancing: "My feeling is that they are due to an excess in the system of one or more of the internal secretions, due to the stimulation of the thyroid gland and other endocrine glands by the tuberculous poison, and are evidences of a defense reaction. In latent . . . cases it is possible that the endocrine glands, which were stimulated to hypersecretion (and possibly hypertrophy) by the tuberculous toxin, still continue to secrete in excess of the normal after the disease has been checked, this excessive secretion giving rise to the various phenomena . . ." (1).

This view is in direct opposition to that held by Sajous, who believes that tuberculosis is preceded by a weakening of the participation of the endocrine glands in sustaining the metabolism of all tissue cells and also their autodefensive activity, which renders the body vulnerable to infection. To me the existence of latent pulmonary tuberculosis suggests lessened vulnerability—tuberculous infection with good resistance. For, were the symptoms described in this paper indicative of vulnerability, we would be likely to have active rather than latent tuberculosis. But before any theory can be formulated, much more extended studies of the tuberculous process will be required, including the participation of the endocrine glands in the body's reaction and the effect of their altered secretion upon organs and tissues other than the lungs. Meanwhile the observant clinician may be able to contribute some aid by directing attention to symptoms and phenomena that are usually ignored. We shall be better able to detect pulmonary tuberculosis when it exists without cough and to differentiate it from conditions that it simulates, the more familiar we become with the various disguises it sometimes assumes.

REFERENCE.

1. Solis-Cohen, Myer: *American Review of Tuberculosis*, 1917, 1, 289.

2113 Chestnut Street.

TABES MESENTERICA FOLLOWING INFLUENZA.*

By Ralph J. Melman, M. D.,
Philadelphia,

Lecture in Pediatrics in the Medical Department of Temple University, and Assistant Pediatrist to the Samaritan and Garretson Hospitals.

We have been trained to think that tuberculosis as a sequel to influenza is generally pulmonary in type, and, therefore, we are likely to overlook this condition if it involves any other part of the human anatomy. Especially should we be careful if this occurs in children, as the following case will demonstrate.

Case.—Boy, L. C., aged seven years. His personal history showed little of importance during his infancy, except a few attacks of diffused bronchitis, due to nasal obstruction, which had been corrected by the removal of adenoids at the age of fifteen months. At the age of three he had had measles; no other childhood disease.

Family history.—Father and mother living, and well; two sisters living. The older sister, aged nine, was convalescing from influenza of eight days' duration when I was called in to see this boy.

Present history.—The patient had been perfectly well until January 20, 1920, when a rise of temperature and vomiting occurred. On examination I found the temperature 105°, and the child complained of severe headache and general muscular pain. Physical examination revealed a well developed boy, weighing about sixty pounds. Nothing was noticed on the neck or head, except a few palpable cervical glands. The skin was hot and dry. The eyes were injected and there was slight photophobia, but they reacted normally to light and accommodation. The teeth were in good condition, the tongue was coated and the pharynx congested; chest was well developed with equal expansion on both sides; respiration 28. A few scattered râles were present. There was no organic heart disease; pulse 110. The abdomen was symmetrical in outline, with no rigidity or tenderness.

Considering the symptoms, physical findings and a history of contagion, a diagnosis of influenza was made and the patient treated accordingly. This condition lasted for three days, when the boy began to improve and the temperature, headache, and muscular pain subsided and continued so for four days, when suddenly, on January 27th, the patient complained bitterly of pain in the left side, just above the costal margin, increased with respiration. With it there was again a rise in temperature to 104°, and also slight tenderness over the splenic area, which showed slight enlargement. There was also an enlargement of the liver.

Pleuropneumonia or the possibility of enteric fever was considered at this stage. We eliminated the former by the absence of any of the physical signs generally present in this condition. As for the latter, we excluded it because of the negative Widal test and the presence of a leucocytosis, 17,000, also by the absence of any gastrointestinal disturbance.

On February 3rd there was no change. The general condition of the patient was fairly good; appetite good. He slept well, the bowels were fairly regular, and he was generally comfortable. The temperature ranged between 104° and 105°, being at its highest between eleven a. m. and three p. m., when it would gradually subside. The physical findings at this stage revealed little of importance in the chest. In the abdomen, the enlargement of the liver and spleen became more prominent. It was thought advisable to have the child's chest and abdomen x rayed. This was done by Dr. Mulford K. Fisher, and he reported as follows: "No abnormalities found in chest wall. In the abdomen there was found an enlarged spleen, and markedly enlarged liver." This only confirmed physical findings. From a further laboratory study we obtained the following results: Red blood count, 3,800,000; white blood count, 6,000; differential normal, Widal negative, no parasites, Wassermann negative, feces negative; urine examination showed a trace of albumen, no casts, diazo negative; spinal fluid negative; von Pirquet markedly positive—so much so that the reaction appeared as though it were a vaccinia; blood culture, negative.

Tuberculosis was suspected, but where? Our attention was directed to the abdomen, because of a slight persistent distention, uninfluenced by treatment, and of the enlargement of liver and spleen. The nurse was then instructed to measure the abdominal circumference daily, with the result that in three days there was an increase of an inch and a half.

On February 10th it was observed that the child was beginning to lose weight, had slight night sweats, the abdomen was noticeably distended, the inguinal glands were palpable and tender. At this time Dr. H. Brooker Mills and myself could palpate some enlarged mesenteric glands. In the few days that followed the child's abdomen became extremely distended, causing him great discomfort, and he complained bitterly of this condition. Active treatment would only give relief for a brief period. A diagnosis of tabes mesenterica was made, and a few prominent surgeons were called in consultation. They advised watchful waiting until physical signs of fluid in abdominal cavity would develop, when surgical interference would be indicated; meanwhile instituting the usual treatment for tuberculosis. The child's condition became alarming, in spite of forced feeding; the loss of weight was alarming, the heart becoming more feeble, the child suffering greatly, due to the tympanites. We decided upon operation immediately, which was performed under spinal anesthesia. The surgeon's report was as follows: "Mesentery covered with enlarged glands, tuberculous in character, some on the verge of breaking down, a small amount of fluid in abdominal cavity, an enlarged spleen and markedly enlarged liver, possibly due to fatty degeneration."

The child made an uneventful recovery, the temperature dropping to normal on the sixth day after operation and remained so. He has since regained his normal weight, and is attending school at present.

In summarizing, I wish to emphasize a few points which I consider important:

---

*Read before the Medical League, December 6, 1920.

1. Severe pleuritic pain on the eighth day of the disease, which I think was referred from abdominal cavity, possibly due to the fact that this complication commenced in that part of the peritoneum, in proximity of diaphragm. I have since seen a case of tabes mesenterica, where the patient was operated on for appendicitis, because pain was referred to lower abdomen, with fatal results.

2. The peculiar temperature curve, being at its highest between eleven a. m. and three p. m.

3. The importance of the von Pirquet test in conjunction with other phenomena in puzzling cases, in children.

4. The importance of early surgical intervention in this disease, and not resort to watchful waiting until the glands break down and have tuberculous meningitis as a possible complication, which was the termination of the second case mentioned above.

5. It is interesting to note that in a proportion of cases of socalled potbelly, due to rickets, where distention persists, we may have as a complication a chronic tabes mesenterica. This is at present under investigation at the Samaritan Hospital, and we may have a preliminary report on it in the near future.

933 North Sixth Street.

TRANSIENT HETEROPHORIA AND STRABISMUS IN NEURASTHENICS.

By George Edward Barnes, B. A., M. D.,
Herkimer, N. Y.

I wish to call the attention of the profession, particularly of ophthalmologists, to an observation which I have made a few times on this subject. It is fairly well known that neurasthenic patients often have an irregular activity of the ciliary muscles. So far as I am aware, however, it has not been observed that they may also have an irregular activity of the extrinsic muscles. I have found that these patients, at least in rare instances, show a condition which is believed by the ophthalmologists who examine them to be an ordinary strabismus or heterophoria. If one is familiar with neurasthenics, it is not difficult to explain these transient deviations, for they are merely instances of the irregular manner in which some of these neurasthenic patients innervate and energize the various muscles of their bodies. These irregularities can be easily observed in their walk and in the use of their arms. Instead of sending the correct amount of nervous force into the various muscles concerned in a given act and thus producing a normal coordinated action, these patients send into certain muscles an unduly large amount of nervous force, and jerky, incoordinated actions result. Acts which are ordinarily performed automatically are made more or less consciously, the will sending out into the various muscles a badly proportioned set of impulses.

Of course prisms in the spectacles of these patients having temporary muscular deviation are very objectionable, and operations on their muscles are more objectionable. But how is the ophthalmologist to distinguish these cases from the usual forms of muscular imbalance? I am not quite positive just how this can best be done, but here are a few good suggestions. The ophthalmologist should be familiar with neurasthenic conditions so very prevalent about him, and he should know the nature of neurasthenia (1 to 4), and not attribute such a thing to that hoax and humbug and superstition, socalled intestinal autointoxication. When the ophthalmologist finds muscular deviations in neurasthenics he should try to prove their nature. The patient should be made to feel as much at ease as possible. By exercising the various extrinsic muscles and diverting the attention for a moment the spastic condition may pass off. The administration of general sedatives would tend to diminish but would not necessarily remove the deviation. It is probable that these measures, combined if necessary with repeated examinations, would clear up most of these cases. On second examination a different muscle may be producing a deviation or no deviation may appear.

REFERENCES.

1. Affective Activity, Emotions as the Cause of Various Neurasthenic Bodily Diseases, New York Medical Journal, April 4, 1914.

2. The Rationale of Neurasthenia and of Disturbances of Arterial Tension, *Boston Medical and Surgical Journal,* October 18, 1917.

3. The Etiology of Disturbances of the Heart Beat, *Boston Medical and Surgical Journal,* October 25, 1917.

4. The Explanation and Treatment of the Effort Syndrome, Neurocirculatory Asthenia (Soldiers' Irritable Heart), *Medical Record,* July 26, 1919.

SCARLATINA.*

By Hyman I. Goldstein, M. D.,
Camden, N. J.

Scarlatina is the scientific name for scarlet fever and refers to any case of scarlet fever, whether mild or severe. Sydenham, in 1670, first assigned this condition as a distinct disease among the acute exanthemata. It is almost constantly present in the larger cities in North America, but outbreaks of scarlet fever in epidemic form are rare in India, Japan, Ceylon, Asia, Australia, and Africa.

Etiology.—Klein's streptococcus, Edington and Jamieson's Bacillus scarlatinæ, and Mallory's protozoon body were each thought to be the cause. Virulent streptococci are always associated with the special organisms of the disease itself, and are known to be the cause of many of the severe complications that arise in the course of this disease. Jochmann found streptococci as the most common and dangerous cause of the secondary infections of scarlatina, but is not the cause of the disease. However, while we do not know the cause of scarlatina, it has been definitely proved that the streptococcus is the main etiological factor in the tonsillar and pharyngeal pseudomembranous conditions of scarlatina. It has been definitely established that the Klebs-Loeffler bacillus is absent in the great majority of cases in the early scarlatinal angina.

G. H. Memoine, in 117 cases of scarlatinal angina, found Streptococcus pyogenes alone in ninety-three, while Klebs-Loeffler was found in addition in five, and the Bacillus coli communis in nine cases. Inclusion bodies have been found by Bernhardt, Döhle, Kretschmer, Höfer, and others. These inclusion bodies are present in the polymorphonuclear cells of the blood in scarlatina. Klimenko's fusiform bacillus and Schultze's Micrococcus S are not the causes of the scarlatina. At present it may be stated that the specific germ of scarlatina has not yet been discovered. Mallory and Medlar thought scarlatina might be due to a strongly gram positive bacillus (Bacillus scarlatinæ); however, this has not been proved.

---

*Read before the Camden County, N. J., Medical Society, February 10, 1920.

GENERAL SYMPTOMATOLOGY.

The disease is commonly ushered in by sore throat, headache, vomiting, together with a very rapid pulse, sharp rise of temperature, and the appearance of an erythematous rash, seen usually by the second day upon the upper thorax and neck, then spreading rapidly over the entire surface of the body. The tongue becomes reddened at the tip and margins with swollen papillæ projecting, giving rise to the strawberry tongue. The uvula is injected and the buccal mucous membrane is of a bright red tint. There is tenderness about the neck, pain over the submaxillary glands, which are often swollen. The maxillary, submaxillary, inguinal and axillary glands, especially the last two groups, are nearly always enlarged. Tonsils become red and swollen and may show whitish patches. Some cases may show early marked involvement of the pharynx and with but a poorly defined, irregular, or transient, rash, or the rash may be absent. Some cases may show a very faint rash for a few hours and slight redness of the pharynx and tongue—often attributed to stomach upset. These are the cases that may cause dissatisfaction and ill feeling between the patient's family and the attending physician, because of the question of diagnosis. The trouble is that many of our mild, atypical cases of scarlatina resemble other minor ailments. It is, therefore, advisable to withhold, in all doubtful cases, the expression of a positive opinion for twenty-four to forty-eight hours, or at least until positive evidences of disease have appeared.

The prodromal symptoms are of short duration, usually a few hours, and may be entirely overlooked. The first thing noticed may be an erythematous blush appearing first over the upper part of the chest, cheeks and neck (a bright, fiery red blush). The period of incubation varies from three to seven or eight days. This period may be shortened or prolonged. The more severe the epidemic the shorter is the incubation period.

SIGNS AND SYMPTOMS.

During the first twenty-four hours the characteristic early symptoms are the sudden and abrupt onset, vomiting (often early and persistent), headache, intense congestion of the faucial mucous membrane, sore throat, rapid rise of temperature, and rapid increase in pulse rate, and sometimes convulsions. These suddenly appearing symptoms and onset are suggestive of scarlatinal infection.

Vomiting.—Von Leube attributes great significance to early vomiting, and considers it an initial symptom of the greatest diagnostic value, occurring more often in scarlatina in childhood than in any other disease, with the possible exception of pneumonia.

Throat.—Early sore throat is almost as constant as the eruption. There is present usually from the first a diffuse, mottled, congested appearance of the uvula, soft palate, and tonsils, and the tonsils are swollen and the crypts filled with exudate. The eruption in the throat makes it sore.

Skin.—The early rash develops as a rule within the first twenty-four to thirty-six hours, and appears as a widely scattered punctate blush, and differing from the sharply defined, pin head, slightly elevated rash of measles and the areas of pale skin with the measles rash are absent in scarlatina.

At the end of the first forty-eight hours, the real scarlatinal rash has made its appearance, first upon the upper thorax and then spreading quickly over the neck, chest, and extremities, but only slightly upon the face. The rash is a diffuse, scarlet blush made up of minute brightly red injected puncta, very slightly elevated and closely studded together, forming a uniform or finely mottled surface. The region about the mouth is comparatively free from rash. The rash develops more rapidly in blond, healthy, full blooded children than in darker skinned or pale children. The rash is more pronounced over areas exposed to irritation or pressure, such as the buttocks, back, bend of elbows, groins; upon streaking or pressing the skin the red blush of the eruption momentarily pales. This paling is not characteristic of scarlatina in any way.

As stated previously, and now emphasized again, the places where the rash appears earliest are the upper thorax and neck, especially down over the subclavicular regions, far less commonly upon the small of the back. In a few hours the rash spreads all over and at the end of ten to twenty hours reaches the legs and entire trunk. I again emphasize the fact that upon the face true scarlatina rash, differing thus from measles and smallpox, is much less marked, and occurs only upon the cheeks and forehead, usually the lips and nose being free, giving a peculiar white ring, which is quite striking. The dorsal surfaces of the hands and feet show a marked eruption, while the plantar and palmar surfaces do not appear so injected. The rash remains at its maximum for from one to three days. The remittent intensity of the rash has been emphasized by Henoch.

Pulse rate.—The pulse rate is markedly increased out of all proportion to the fever. From the second to the third day the rash begins to fade and the temperature comes down slowly but the pulse continues quite rapid. In measles there is often an abrupt fall in temperature.

Tongue.—The appearance of the tongue and throat are almost pathognomonic of the disease in some cases. The eruption makes the tongue sore at times, and results in the well known strawberry tongue, as mentioned above. The tongue loses its heavy coating after the second day and becomes deeply injected, the papillæ at the tip and along the margins becoming more prominent, giving rise to the *katzenzunge*.

Enlarged glands.—Von Jürgensen emphasizes the diagnostic value of early enlargement of the inguinal glands in scarlatina. Schamberg also has emphasized the great frequency of enlargement of the inguinal, axillary, and maxillary glands. He found the inguinal glands enlarged in all cases, the axillary in ninety-six per cent., the maxillary in ninety-five per cent., and the posterior cervical in seventy-seven per cent. of the cases. The study of these one hundred cases by Schamberg showed that the maxillary glands commonly attained the largest size, and also most frequently underwent suppuration. In all of the one hundred cases studied, on the second or third day of the disease the enlargement of the lymphatic glands was well marked.

Polymorphonuclear leucocytosis.—This condition is always present. In measles there is a leucopenia. Döhle, in thirty scarlatina cases, found inclusion bodies in the polymorphonuclear leucocytes. He did not find them after the sixth day of the disease. Kretschmer, and Nicoll and Williams, also found these bodies in the blood smears in forty-five out of fifty-one cases. Isenschmid and Schemensky have found them in practically all the cases of scarlatina in the early stage. They are not found in German measles, measles, diphtheria, or whooping cough. The most characteristic inclusion bodies are those of a triangular form with a long, taillike end. They may be found in pneumonia.

Rumpel-Leede sign.—Rumpel (1909), Leede, and Jampolis have reported and recommended as a suggestive diagnostic sign the appearance of petechiæ in the skin on the inner surface of the elbow joint, when the skin is stretched until it becomes anemic, after a broad constricting band above the elbow joint has been previously applied for ten or fifteen minutes and then loosened. A negative reaction is perhaps a greater indication that scarlatina is not present than is a positive reaction that it is present. Jampolis found it in 199 out of 200 cases. Bennecke confirmed the diagnostic significance of the Rumpel-Leede phenomenon. A venous stasis only being produced in the arm, the arteries being left alone, the hemorrhages appear at the elbow in from five to twenty minutes—punctate or larger, in some cases becoming confluent. He found them in nearly all cases.

Desquamation.—The eruption is due to an inflammation of the skin and to very minute vesicles which form in the deeper layers of the epithelium and loosen the cells. This loosened epithelium peels off, and gives rise to the characteristic desquamation. Desquamation usually begins in from ten to twenty days after the onset of the disease. It begins around the roots of the nails, the palms, and soles, and extends over the whole body.

Schumacher states that desquamation is not a positive sign of recent scarlet fever, as scarlet fever can exist without any subsequent desquamation, and that desquamation may be the result of a number of constitutional diseases of long duration, as pneumonia and tuberculosis, or some local inflammatory condition of lengthy duration, as sunburn or ivy poisoning; or the internal ingestion of such drugs as arsenic; or the external application of strong antiseptics, such as phenol or formaldehyde gas. Desquamation begins first where the rash was first seen and from where it first disappears, namely, the upper thorax and neck.

Wassermann reaction and Babinski sign.—P. Teissier and R. Benard found a positive Wassermann reaction in eighty-four per cent. of the cases of scarlatina in the Hôpital Claude-Bernard. The Babinski sign in scarlatina and diphtheria has been reported to have occurred in a rather large percentage of cases, nineteen to twenty-five per cent. of all cases.

Transient albuminuria.—Early in the course of the disease, albuminuria is seen in seventy-five to ninety per cent. of all cases, according to Eichhorst.

Age.—The greatest number of cases occur between the ages of one and five or six years. McCollom, at the Boston City Hospital, reported that seventy-five per cent. of patients were between two and ten years of age.

IMMUNITY.

As a rule one attack protects against a subsequent infection. Second attacks have been reported. Others have reported even third attacks. One must not make a positive diagnosis of a second attack of scarlatina without first excluding all other possible conditions, and without a careful study of all the presenting symptoms and signs and a thorough study of the history of the case. Henoch has seen but one authentic case of a second attack of scarlatina. According to Körner, when a second attack occurs it usually follows from two to six years after the first (which first attack usually occurs before the age of ten years). Murchison has reported a third and Stiebel a fourth attack of scarlatina. The various erythemata must, of course, be excluded, such as drug erythema; measles, rubella, antitoxin erythemas, toxic or simple erythemas, erythema scarlatiniforme, erythema scarlatiniforme desquamativum, etc. Jacobsen, in April, 1914, reported the case of a family of four children who had scarlatina in 1908 and 1911. Over a year later the children had scarlatina again, each one of the children having a typical attack. The second attack was more serious than the first in all, and one girl, eight years old, died from myocarditis.

TYPES AND VARIETIES.

Numerous varieties or types of scarlatina have been described, such as the following:

1. Scarlatina anginosa.
2. Scarlatina maligna (toxic).
3. Scarlatina modificata:
    - a Scarlatina miliaris.
    - b Scarlatina lævigata.
    - c Scarlatina lævis.
    - d Scarlatina sine exanthemata.
    - e Scarlatina hemorrhagica.
    - f Scarlatina variegata.
    - g Scarlatina sine angina.
    - h Scarlatina sine febre.

A simple classification is this:

1. Well developed and severe cases of scarlatina.

2. Mild cases, in which there is sore throat, and a slight (evanescent) rash, with subsequent desquamation or peeling.

3. Still milder cases—not a sufficiently concen-

trated infection to cause a rash, but which produces a sore throat, and possibly exfoliation of the tongue (strawberry tongue). These subcases are of the greatest importance from a public health viewpoint. The eruption may at times be abortive, or not seen at all, or the rash fails to appear (scarlatina sine eruptione). It is possible that the rash appears, but is so faint and evanescent as to go unnoticed.

MORTALITY.

In a study of 1,153 cases of scarlatina by L. I. Dublin, there were ninety deaths, or a mortality rate of 7.8 per cent. McCollom found an average of 8.4 per cent. mortality rate in 37,810 cases in Boston in twenty-eight years. In 32,317 cases of scarlatina during a twelve year period in Philadelphia (1898-1910), 1,759 deaths occurred, or a mortality rate of slightly over five per cent.

Dublin found eighty-two per cent. of all cases (1,153 in the series) were among children between two and ten years. The greatest disposition to the disease is found among children three to seven years of age, according to Dublin. According to Osler, ninety per cent. of all scarlatina deaths are of children under ten years. Dublin's figure was ninety-two per cent. The mortality averages from five to twelve per cent., varying in different localities and in different epidemics, depending often on the season of the year.

SEQUELÆ AND COMPLICATIONS.

Otitis.—According to Carter, otitis is perhaps the commonest complication of scarlatina. According to Holt, perhaps seventy-five per cent. of the severe cases show otitis. In 4,015 cases analyzed by Caiger, 11.05 per cent. showed otitis media. Bader and Guinon found that thirty-three per cent. of all the cases of scarlatina showed mild or catarrhal otitis media and the purulent form in 4.5 per cent. Ten per cent. of acquired deafness has its origin in scarlatina. Barasch found among 1,438 cases 13.8 per cent. showed otitis. Fisher reported middle ear trouble in twenty per cent. of cases. Richardson, of Providence, in a letter to me, states that about twelve per cent. of the cases show acute otitis media with less than one half to one per cent. developing mastoiditis. Finlayson, in 4,397 cases studied, found otitis in ten per cent.

Nephritis.—Osler records the presence of nephritis in from ten to twenty per cent. of his cases. H. Barasch reports that 16.1 per cent. of 1,438 cases were complicated by nephritis, at the Urban Hospital, Berlin. No case, however mild, is wholly free from the danger of a subsequent severe renal inflammation. The occurrence of nephritis during the course of scarlatina is due to the circulation in the blood of the specific virus or toxin which acts as a direct irritant. Nephritis appears less frequently in young adults than in childhood. Scarlatinal nephritis develops late in first or early in second week—from the tenth to the twentieth day of the disease.

There may be, 1, early or initial mild nephritis; 2, septic nephritis, and, 3, postscarlatinal nephritis. Out of 1,200 cases, Richardson found, two or three years ago in a study of the records of the Providence City Hospital, about one per cent. nephritis, with no deaths. However, since that time he found the incidence in nephritis was much greater in that one year than in all the cases he had previously put together. Wilson, of the Bureau of Hospitals, New York city, states in a communication to me that the frequency of complications in the order of their occurrence are endocarditis, angina, arthritis, nephritis, and mastoiditis. Complications are very much more frequent where the patients are permitted to get out of bed too soon after the fall of temperature. Barasch reports among the 1,438 cases above mentioned the following complications: Nephritis, 16.1 per cent.; otitis, 13.8 per cent.; rheumatism, 5.9 per cent.; sepsis, 9.1 per cent.; endocarditis, 1.3 per cent.; late involvement of glands in the neck, 33.4 per cent, and 16.4 per cent. of the total were complicated by diphtheria.

Heart.—The heart is very susceptible to the scarlatinal poison, shown by the marked tachycardia and irregular, small, rapid pulse. The mural endocardium (myocarditis) is probably much more often affected than the valves themselves.

Acute endocarditis is apparently rare. Murmurs may often be heard, probably due to the toxic myocarditis. The rapid and at times irregular pulse is chiefly seen early in the attack. Later on the heart sounds may lose the normal tone. This evidence of cardiac weakness may be due to endocarditis or myocarditis—probably the latter, because it is usually the endocardium of the heart wall, rather than of the valves, that is involved. In cases of nephritis, there is seen in children acute dilatation and hypertrophy of the left ventricle.

A. Stegemann, from an examination of forty-nine cases, found in toxic cases of scarlatina of short duration, the parenchymatous changes in the heart muscle slight. In the infectious cases of long duration there were acute parenchymatous degenerations and necrosis. The number and size of the Nissl bodies were markedly decreased in severe toxic cases, in contrast with the infectious cases. He believes that in severe toxic cases of scarlatina, of short duration, the cause of the heart weakness lies in pathological changes in the heart ganglia.

Adenitis.—Fisher reported that in six thousand cases fourteen per cent. had adenitis. The frequency of this complication varies considerably; it often occurs in the early stage of the disease or at times in the second or third week.

Scarlatinal synovitis.—This is comparatively common. Serous (simple) synovitis is more common, and purulent arthritis may occur, but is not frequently seen. Synovitis occurs in about seven per cent. of the cases, is usually transient, nearly always appearing from the fourth to the tenth day, and in seventy-two per cent. of the cases affects the wrists, according to Marsden. Carslow in 533 cases found synovitis in sixty. It is most frequent in children past five years of age.

Phlebitis.—This complication is very rare.

Bronchopneumonia.—Bronchopneumonia, and even true croupous pneumonia, occur more frequently than we realize, particularly in nephritis cases. Pyemia and abscess of the lungs may occur.

Acute psychosis.—Psychosis may occur in convalescence.

Diphtheria.—Diphtheria complications occur as a rule late in the course of the disease, and often after complete subsidence of the primary throat inflammation. Paralysis may occur in these cases. Henoch has never seen oculomotor or palatal paralysis following scarlatinal angina, except in those few cases complicated by a true diphtheria. Richardson states that among his cases diphtheria developed in only about one to three among two to three hundred cases of scarlatina every year. R. J. Wilson, of the New York Department of Health, states that diphtheria is an infrequent complication of scarlet fever, and since the advent of the Schick test it has been almost entirely eliminated as a complication in the wards of the hospital. It should be remembered, however, that secondary infection by the Klebs-Loeffler bacilli may occur, most likely after the first week. This may be easily overlooked. It is therefore advisable to examine the throat at each visit, and if suspicious to take a culture smear at once.

DIAGNOSIS.

Differential diagnosis must be made from measles, Duke's (fourth) disease; drug eruptions due to quinine, belladonna, antipyrine, opium, chloral, potassium bromide, potassium iodide, mercury and antitoxic sera; rubella (German measles); toxic transient erythema, sometimes seen in diphtheria; erythema scarlatiniforme, erythema scarlatiniforme desquamativum, and simple erythemas with or without tonsillitis (streptococcic). However, suffice it to say that in the large majority of cases the short incubation period (stadium incubation—two to seven days), the very short prodromal stage (stadium prodromorum of a few hours—twenty-four or less), the early vomiting, the early sore throat, the characteristic punctate fiery red eruption (stadium eruptionis), the very rapid pulse—140-165, out of all proportion to the temperature and general condition of the patient; Pastia's sign—an intense continuous linear exanthem in the skin folds at the bend of the elbow; the Rumpel-Leede phenomenon; the presence of inclusion bodies in the polynuclear cells of the blood prior to the sixth day, true leucocytosis (an absolute and relative increase of the polymorphonuclears); the rapidly growing cultures (throat) of the Class coccus and the strawberry tongue—several or all of these symptoms will aid in making the correct diagnosis of scarlatina.

In measles we have a leucopenia, Koplik spots, the peculiar rash, and the catarrhal symptoms and the marked contagiousness of the disease render valuable aid in diagnosis. Measles is liable to be mistaken for scarlatina only in special cases. In scarlatina there is tenderness about the neck, with pain on palpating the submaxillary glands, which are often swollen. In scarlatina, too, the congestive disturbance of the mucous membranes is mainly confined to the pharynx, tonsils, and larynx. There is much more photophobia and dread of light in measles than in scarlatina. In measles, too, there is a much more general catarrhal condition of the upper air passages, with coryza and the characteristic dry, croupy, hoarse, barking cough. The buccal mucous membrane in scarlatina as a rule is of a bright red tint and the uvula is much congested; in measles (rubeola), there is a pale bluish tint, with a coated tongue (whitish fur) with a few scattered enlarged reddened papillæ; the rash in measles does not appear until the fourth day, while, as stated above, the prodromal stage in scarlatina does not last longer than twenty-four hours. The dark red maculæ and papules of measles, with the slightly cyanotic features, certainly differ from the bright red punctate rash of scarlatina. The first lesions in measles appear on the upper part of the forehead, on the temples behind the ears, and on the sides of the neck. Later it appears about the eyes, mouth, and on the chin. In scarlatina, the rash first appears on the upper thorax and neck. Diarrhea is often seen in measles, rare in scarlatina, although it has been known to occur at times early in the disease.

In rubella the rash appears first on the face and is very evanescent and is never entirely confluent, being always "measley" or "spotty" in appearance. Constitutional symptoms, otitis, severe pharyngeal involvement, and albuminuria, are almost unknown in rubella. This is a most benign short and mild infectious disease. The onset even is mild and slow and insidious, while in scarlatina it is always sudden.

In a report of 150 cases Griffith found some congestion of the upper portion of the anterior pillars of the fauces with some swelling of the tonsils in rubella, and Forchheimer described his small, discrete, dark red (not dusky) papules on the soft palate, remaining only about twelve to fifteen hours, and appearing simultaneously with the exanthem in rubella. Rehn also observed similar lesions on the soft palate and in the conjunctivæ. Bolognini's pathognomonic sign of measles consists of a fine peritoneal crepitation or friction—as if two bottles were rubbed together, when the pulps of the fingers are applied with gentle pressure to the relaxed abdomen, while the legs are flexed. However, this sign is present in other affections and not of much diagnostic significance.

In rubella, too, we have adenopathy in ninety-six to ninety-eight per cent. of all cases, the superficial or postcervical and the maxillary glands being most frequently involved. The occipital and the anterior and posterior auricular are frequently palpably enlarged. Finally, in rubella, the pinkish maculæ and papules are very often discrete, but frequently become confluent in a few hours. They are first seen on the face and scalp, and next on the neck and upper chest, without any tendency to form groups, crescents or clusters (as in measles). Most important of all, the prominence of the eruption varies in different parts of the body. Thus the eruption has already begun to fade on the face before it has fully developed on the trunk: it is usually nearly gone on the face before it begins to fade on the trunk, and it is usually nearly gone on the trunk before the legs are involved. This characteristic appearance of the eruption on various parts of the body helps to distinguish this disease from scarlet fever and measles.

ERYTHEMA SCARLATINIFORME DESQUAMATIVUM, ERYTHEMA SCARLATINIFORME, ERYTHEMA SCARLATINOIDE.

There are several grades of this condition, mild and severe. The rash is often almost continuous over the entire surface. In some cases the rash is of a morbilliform type, in others of a scarlatinoid form, which at times is even punctiform in appearance at first, later becoming a uniform bright pink, fiery red, or sluggish livid red color. Usually the attack is ushered in with mild or more severe febrile symptoms. Often the constitutional symptoms abate when the erythematous blush appears. In other cases, the general symptoms continue for several days after the eruption appears. The rash begins to subside in two, three, or four days with desquamation. Recurrences are frequently seen. The later attacks are usually mild. The rash is not usually quite so general as in scarlatina. The course usually runs from 10 days to three weeks. Typical strawberry tongue and adenopathy are usually absent. The anginal symptoms are very slight or entirely absent, and the disease is noncontagious.

Case I.—C. S., attorney, twenty-four years of age, male, white. Had had scarlet fever when six years old. In 1917 and 1918 he had had attacks of red rash, with itching and swelling, puffiness of head and face, a trace of albumin in the urine, and some sore throat. The attacks lasted about ten days. With this diffuse uniform red rash there would be urticaria, large wheals appearing over various parts of the body, followed later by some desquamation. The third attack began early in December, 1919, with itching and burning, swelling of the entire face and scalp, numerous large wheals appearing all over the trunk, back of neck and thighs, with some fever and sore throat. Shortly afterward, a uniform fiery scarlatinoid (punctate) rash appeared all over the body, particularly marked over the abdomen, neck, and back. The throat was considerably congested, and soreness was complained of. Typical strawberry tongue was absent.

Throat cultures showed at first only streptococci, later staphylococci also. The rash began to fade after the fifth or sixth day. There was still some eruption over the abdomen and back on the seventh and eighth days of the attack. The urine showed a trace of albumin; specific gravity, 1,013; a few red blood cells; squamous, renal epithelia; a few pus cells; ammonium urates; total solids 30.3 grams to the litre; urea 1.3 per cent.; no acetone, no indican, no sugar, no casts. Desquamation was a prominent feature in the case, but it was scarcely noticeable on the hands and feet.

At first, the case certainly strongly suggested scarlatina, and this, therefore, would be a fourth attack, if the patient was correct in his description of the attacks of 1917 and 1918, and if the history of true scarlatina when six years of age had reference also to a similar attack of recurrent erythema. In my opinion this was a case of erythema scarlatiniforme desquamativum (erythema scarlatinoides recidivans, or recurrent exfoliative erythema).

Carter describes and reports a similar case in a young woman, aged twenty, who had four attacks. This was Dr. Corlett's patient, and shows the difficulty of establishing a diagnosis without reference to the history, and the importance of remembering that the appearance of a characteristic desquamation is by no means always an infallible sign of recent scarlatina. In my case, albuminuria, with headache, sore throat, fever, extensive eruption, and marked desquamation occurred in three attacks in 1917, 1918, and 1919. Whether the attack in childhood was scarlet fever or the first attack of scarlatinoid erythema resembling the others, I do not know. The typical changes seen in the tongue from the third to the sixth day in true scarlatina, were absent in my patient, although the edges and tip of his tongue were raw and congested. Desquamation in this case continued for only a few days, when it ceased. In true scarlet fever the desquamation usually lasts for two to six weeks.

Recurrent attacks of scarlatina are very rare. Holt says he has never seen an undoubted instance of a second attack in the same patient. Kinnicutt reported two attacks within eight months in a boy of five years. Pritchard reported a case in which three attacks occurred within two years. Henoch only knew of one authentic case of a second attack of scarlatina. Statements by physicians that they have seen two and three attacks of scarlatina in the same patient should be accepted with some doubt because of possible errors in diagnosis and mistakes in the history of the cases.

FACTS IMPORTANT TO REMEMBER.

1. At present there is no certain test for scarlatina, just as there is no certain test for influenza and a few other common infectious diseases.
2. Many patients are not even sick enough to have a physician, and have only a very faint eruption, later followed, however, by desquamation. This is the best sign we have.
3. If a child has a desquamation of the skin two or three weeks after a slight attack of illness with slight fever, it is usually safe to say that the child had scarlet fever.
4. The causative organisms of scarlatina are found in the discharges of the nose and mouth, and are not found in the skin, nor in the scales (even during desquamation). The organisms may be present in the discharges from the ear and abscesses.
5. The mild cases, the unrecognized cases, those with discharge from the nose, throat and ears, and abscesses, are the carriers that cause most of the scarlatina cases.
6. Scarlatina is transmitted by contact with fresh discharges of active cases or with the discharges of carriers. The organisms produce the disease in from two to seven days after infection. Therefore, if a child has been exposed to infection and does not become ill within a week, he may safely be allowed to mingle with other children.
7. One attack of scarlatina usually confers lifelong immunity. Carriers working in dairies or in milk establishments may contaminate the milk, and so help to spread the disease through infected milk.

PROPHYLAXIS.

1. Early discovery of cases is an important factor in the prevention of the spread of this disease. We

know that every case of scarlatina comes from a previous case. Unrecognized cases, missed cases, twenty-four hour cases, and atypical cases, are the ones that may be caught if the physicians, health officials, school doctors, school nurses, and school teachers will make more thorough and complete examinations. In suspected cases the patients should all be completely stripped and examined.

2. Prompt isolation.

3. Proper disposal of all discharges and excretions.

4. Protection of school children.

5. Proper treatment at home or in a contagious disease hospital.

6. Public health propaganda.

7. Proper attention to personal cleanliness, and suitable precautions taken by the attendants and those coming in contact with the case or cases including the physician.

8. Proper attention to toilet articles, dishes, milk bottles, doorknobs, and any other article that may have been contaminated with the fresh discharges of the patient.

Disinfection or fumigation after recovery is unimportant. Desquamation is unimportant, except, of course, the possibility that the skin may be contaminated by the infected or organism bearing discharges from the nose, throat, and ears. The infective material in scarlet fever is found in the discharges from the nose, throat, and ears, and in the urine and feces. Proper attention to these should be given, as mentioned above. It has been shown that ordinary cleanliness is sufficient to render articles free from scarlatina germs, and that these germs are not longlived, and are readily killed. Children who live in a house where there exists an active scarlet fever case must not be allowed to attend school or play with other children, because they may come in contact with the sick child in the house unbeknown to anyone. However, if children who have had the disease and are immune, leave the house, they may be allowed to return to school. If nonimmune children leave the house, and after a period of observation for seven days do not present any symptoms, they may be allowed to return to school.

TREATMENT.

Avoid meddlesome treatment; avoid overtreatment.

Nose and throat.—Salt solution is the simplest and most efficient cleansing agent for the nose and throat. Liquor antisepticus alkalinus may also be used, with a nasal douche, every two or three hours. An ice bag constantly applied over the throat gives relief. Avoid strong, irritating, unpleasant, throat gargling solutions.

Blood serum.—The blood serum from patients who have recovered from scarlatina has been used with excellent results. An easy and practical way is to withdraw a few ounces, say four, five, or eight ounces, of the blood from the donor and immediately inject the whole blood into the gluteal region of the patient. (Citrate solution is first drawn through the luer syringe.) This blood is soon absorbed and the dangers of intravenous injection and marked anaphylactic reactions are thus avoided. It is important to know that the donor is not syphilitic.

Rest and fresh air.—The patient should be kept in bed, even in the mildest cases, and not covered too heavily. Plenty of fresh air and thorough ventilation are most important. The temperature of the room should be kept at about 65°-70°F. (23°C.) Avoid exposure to drafts. The patient should be kept in bed for a week, if possible, after the subsidence of the active febrile stage. In this way only can the danger of late renal complication be avoided, while daily examination of the urine is the only guide as to just what changes may be taking place. The phenolphthalein renal function test may be tried.

Skin.—Throughout the course of the disease a tepid sponge bath should be given once or twice a day. These sponge baths diminish the tension of the skin and aid in skin elimination, besides being extremely grateful to the patient. For the itching, and later for the desquamation, cold cream or cacao butter or a mixture of lanolin, petrolatum and olive oil, with a little phenol (one or two per cent.), may be used. Menthol, one half of one per cent., may also be added for the relief of the itching.

Unfortunately, there is as yet no specific treatment for scarlatina. Huber and Blumenthal (1) have reported the use of serum from the blood of convalescent scarlatinal patients with varied results in a series of thirteen cases. E. M. Landis (2) has reported a striking case of recovery following the use of antistreptococcic serum.

A. Baginsky (3) reported a series of forty-eight cases of scarlet fever, treated with Marmorek's antistreptococcic serum, with a mortality of 14.6 per cent. Antistreptococcic serum and streptococcic vaccines may, theoretically at least, be of real value in all cases of scarlatina complicated by streptococcic angina, ear infections, and abscesses. In these latter a mixed staphylostreptococcal serobacterin may be tried.

In all septic cases, and in cases threatened with uremia, the use, subcutaneously and even intravenously, of large amounts of sterile normal salt solution has been advised by Forchheimer, E. P. Carter, and others. The object is to dilute the poison circulating and as a mechanical aid to diuresis and the elimination of toxins. It is possible that in the severe toxic cases much might be gained by such measures if adopted early. In the vast majority of cases with slight sore throat, little fever, and only mild constitutional symptoms, all the treatment necessary will be isolation, rest in bed, diet and nursing, local care of the nasopharynx and skin, and the administration of an alkaline mixture as follows:

Sodi citratis,	dr. iii
Syrupi,	fl. dr. iv
Liq. potassii citratis, Liq. ammon. acetatis,	āā q. s. 4 oz.

M. Sig.: One fl. dr. in sweetened water every two or three hours.

Fever.—In reference to the use of antipyretic drugs, Osler has properly stated that medicinal antipyretics are not of much service in comparison with cold water. Osler, Henoch, Moizard, Steffen, Currie, Von Jürgensen, Jacobi, Carter, and many others have recommended cool tepid sponge baths as the best means, the safest and most reliable method we have for reducing the temperature in scarlatina.

Bowels.—Mild saline laxatives or small fractional doses of calomel, followed by an evacuating enema, are indicated.

Stimulation.—When the pulse is weak, soft, and of low tension, some form of digitalis may be used. As soon as the first sound of the heart becomes weak or the heart sounds lose their normal tone and any threatening change is noted in the pulse, stimulation should and must be resorted to and insisted upon. Brandy or whiskey in suitable doses may be given cautiously. Strychnine in small doses, with or without iron, may be given. Camphor, one to three grains, hypodermically, or caffeine sodium benzoate are of the greatest value in this condition. Sometimes, especially if the cardiac weakness is associated with marked restlessness, delirium and grave toxic symptoms, very small doses of morphine as recommended by Jacobi, seem sufficient, together with bromides and hot baths. Musk, if obtainable, can be tried in doses of one half to three grains. All my patients receive alkaline enteroclysis. Bicarbonate of soda solution is given by rectum in all cases, together with alkaline drinks by mouth. Plenty of orange juice, lemonade and water, milk, buttermilk, ice cream, orange albumin, kalak water, and Vichy, are allowed.

Other complications, such as earache (otitis), lymphadenitis, severe anginal complications, arthritis, endocarditis, pericarditis, bronchitis, pneumonia, pleurisy, stomatitis, gastroenteritis, diarrhea, and nephritis—all require attention and treatment as in any other infectious disease. It is unnecessary to go into details in the treatment of these complications in a paper of this kind. Diphtheria may be a complicating infection in scarlatina, and when it does occur, as shown by positive throat cultures of Klebs-Loeffler bacilli, diphtheria antitoxin should be immediately injected and the heart stimulated.

I do not believe that either belladonna or arsenic have any protective powers against scarlatina. Illingworth suggested that biniodide of mercury would cut short an attack and cause the rash to disappear rapidly. Mehary believed salicin had some abortive power. Chlorate of potash should not be used in scarlatina. Very often I have found warm tub baths relieve nervousness and restlessness and reduce the temperature one or two degrees very promptly. Sponging—continued for ten minutes—with warm water (90° F.), with or without alcohol, may be substituted for the bath. Water should be applied freely and, if necessary, cooler water (70°-80° F.) may be used. A good reaction should be obtained; the patient must not get blue or remain cold.

Moser reported excellent results from a polyvalent antistreptococcic serum. The serum may be used against the septic manifestations. Its early use may be of value in protecting patients against subsequent streptococcic infections and serious complications be avoided. McCollom has recommended insufflations of calomel, instead of irrigations, for the nasopharynx.

R. Koch reports excellent results in the treatment of scarlet fever with intravenous injection of 100 c. c. of serum taken from convalescents; that is, at about the third week of the disease. Among 280 cases of extremely severe scarlet fever, only one patient died, and this was a child who was moribund when first seen, dying in an hour. Convalescent and normal serum act alike, but the former is more powerful. It requires 50 c. c. for very young children and 100 c. c. for older ones; it is better to mix the serums of several convalescents. It is most efficient during the early stages of the disease. Koch regards it as an almost absolutely certain weapon during the early stages of the disease if given intravenously and in sufficient doses.

A. Zingher, of New York, treated scarlatina with fresh blood from convalescent patients. He injected directly or first citrated by adding one c. c. ten per cent. sodium citrate solution to one ounce of whole blood, making the final dilution of the citrate 0.33 per cent. Four ounces can easily be injected in a young child, and eight ounces into an older child. He reported treating fourteen toxic cases in this way. The majority of the patients were very toxic and often delirious.

Gabritschewsky, in 1905, introduced the use of streptococcic (cocci from cases of scarlatina) vaccine for preventive inoculation, and was used quite extensively in Russia. R. M. Smith concludes that Gabritschewsky's vaccines do appear to have some influence in controlling epidemics of scarlatina, and should be tried. Russian physicians used it extensively. Watters tried this preventive inoculation on twenty-one nurses who had not had scarlet fever previously.

Reiss and Hertz used the mixed serum from several scarlatina cases (convalescent), injected it intravenously in large doses. They believe in its preeminent efficacy, and as actually life saving, in many cases. Fifty c. c. for children and 100 c. c. for adults. Injections must be commenced before the fourth or fifth day to be promptly effectual. Normal serum seemed entirely impotent. They took the serum from convalescents between the eighteenth and twenty-fourth days, after negative Wassermann and excluding tuberculosis and septic cases.

Meltzer, Auer, Morgenroth, and Levy have shown that absorption from muscle is very much faster than it is from subcutaneous tissue. In fact, the rapidity of action of substances so injected approximates very closely that following an intravenous injection. Twenty-three patients treated at Willard Parker Hospital with intramuscular injections of blood. Distinct beneficial results were noted in the very severe cases by Abraham Zingher.

D. MacIntyre treated septic scarlet fever cases with autogenous streptococcic vaccine in the acute stage. All the patients recovered. John A. Kolmer does not think streptococcic immunization has any value as a prophylactic measure against scarlatina. Epinephrine, in ten to twenty drops at a dose by mouth, was used by Paoloantonio in kidney cases of scarlatina, and in urgent cases with hematuria he gave it subcutaneously.

REFERENCES AND BIBLIOGRAPHY.

1. Huber and Blumenthal: *Berliner klin. Woch.*, No. 31, 1897, p. 671.
2. Landis, E. M.: *Journal A. M. A.*, April 8, 1899.
3. Baginsky, A.: *Berliner klin. Woch.*, 1896, No. 33, p. 34.
4. Leede: *München. med. Wochenschr.*, 1911, lviii, 293 and 1673.
5. Jampolis, Mark: *American Journal of Diseases of Children*, June, 1912, p. 406.
6. Klimenko: *Russk. Vrach.*, xiii, No. 8.
7. Schultze: *Medical Record*, December 10, 1910.
8. Döhle: *Centralbl. f. Bacteriolog.*, November 23, 1911.
9. Isenshmid and Schemensky: *München. med. Wochenschr.*, 1914, lxi, 1997.
10. MacIntyre, D.: *British Journal of Children's Diseases*, London, November, No. 131, p. 470.
11. Dublin, L. I.: *Journal A. M. A.*, May 27, 1916, p. 1667-9.
12. Mallory and Medlar: *Jour. Med. Research*, 1916, xxxiv, 127.
13. *Journal A. M. A.*, Editorial, p. 1206, April 15, 1916.
14. Koch: *Deutsche med. Woch., Berlin*, March 25, 1915, xli, No. 13, pp. 361-392.
15. Zingher, A.: *New York State Journal of Medicine*, March, 1916, xvi, No. 3, p. 185.
16. Stegemann, A.: *Jahrbuch für Kinderheilkunde*, November, 1914, lxxx, No. 5, p. 472.
17. Barasch, H.: *Deutsche med. Woch.*, Berlin, January 1, 1915, xli, No. 1, p. 10.
18. *Journal A. M. A.*, Abstract, February 13, 1915, p. 624.
19. Smith, R. M.: *Boston Medical and Surgical Journal*, 1910, clx, 242.
20. Watters: *Journal A. M. A.*, February 24, 1912, p. 546.
21. *Journal A. M. A.*, Scarlet Fever, March 13, 1915, 908-909; March 20, 1915, 995-997; March 27, 1915, 1073-1075.
22. Zingher, A.: *Journal A. M. A.*, September 4, 1915, 875-876.
23. Reiss and Hoertz: *Münch. med. Woch.*, Munich, August 31, lxii, No. 35.
24. Paoloantonio: *Policlinico*, Rome, November 30, 1913, xx, No. 48, p. 1760.
25. Jacobsen: *Archives de médecine des enfants*, Paris, April, 1914, xvii, No. 4, p. 255.
26. Holt: *Textbook*, Holt and Howland, *Diseases of Childhood.*
27. Anders: *Practice of Medicine*, Thirteenth Edition.
28. Osler: *Practice of Medicine.*
29. Corlett: *Acute Infectious Exanthemata*, treatise.
30. Griffith, J. P. C.: *Diseases of Children*, 1920, two vols.
31. Nicoll, Mathias: Value of Inclusion Bodies, Research Laboratories, Department of Health, New York City, *Archives of Pediatrics*, 1913, p. 350.
32. Fischer, Louis: Treatment of Scarlatina by Neosalvarsan, *Ibid*, 1913, p. 352.
33. Leopold, J. S.: Etiology of Measles, *Ibid*, 1913, p. 356.
34. Michael, May: Phenomenon of Scarlatina, *Ibid*, 1912, p. 298.
35. Miller, D. J. M.: Diagnosis of Atypical Scarlatina, *Ibid*, 1912, p. 289.

1425 Broadway.

The Significance of Yellow Spinal Fluid.—Charles H. Nammack (*American Journal of the Medical Sciences*, April, 1920) says that yellow spinal fluid occurs in a wide range of diseases of the spinal cord and meninges. The complete syndrome of Froin is comparatively rare in its occurrence. In acute and subacute conditions the presence of yellow fluid strongly suggests the probable diagnosis of tuberculous meningitis or poliomyelitis.

SEBORRHEA OF THE SCALP.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland.

Since premature baldness is now recognized to be most commonly due to seborrhea of the scalp, this fact has increased the interest in this morbid process, as well as its treatment. However, only a small number of dermatologists have as yet given special attention to this subject. In what is to follow I desire to call attention to the present views held here on the pathogenesis and pathology of seborrhea of the scalp, reserving the question of its modern treatment for a future communication.

The hygiene of the scalp is to be compared with that of the buccal cavity and teeth. The excellent results obtained in the latter prove beyond question what can be obtained by the daily systematic care of the teeth. Merz, of Bale, has said that he has observed that often the first symptoms of seborrhea of the scalp coincide with the appearance of dental caries, therefore earlier than is generally suspected.

At the onset, seborrhea gives rise to little anomalies of the sebaceous secretion, but these are easily overlooked, and since for this reason the process in its early phase is therapeutically neglected, it continues to progress and to develop its destructive action. It is, above all, these early cases of seborrhea which require urgent treatment if baldness is to be prevented.

The etiology of seborrhea is at present known, even if opinions differ somewhat on certain aspects of the process. Seborrhea, which is nothing but a sebaceous discharge, is naturally related to the producing organ of sebum—the sebaceous glands which open into the hair follicles. Therefore, this morbid process is not only met with on the scalp, but on all regions of the cutaneous surface where sebaceous glands exist. The hair follicle represents an epithelial invagination surrounded with numerous capillary vessels whose lower part bears the papilla, that is to say, the point where the hair forms.

In the development of seborrhea two states can be distinguished which are occasioned by the anatomical construction of the follicle. Beginning at its starting point and continuing up to the spot where the sebaceous gland opens, the wall of the follicle retains its epithelial character. It represents a simple epithelial sac, while from this point up to the papilla it has undergone the changes and differentiation necessary for the formation of the sheaths of the root. These two parts play a very different part in the process of seborrhea, but if these simple anatomical relations in the construction of the follicle be kept in mind the numerous theories of the etiology of seborrhea may be ignored.

The following processes are in action during the first phase: The epithelial duct represents an excellent receptacle for dust and filth of all kinds. The sebum becomes thickened by the addition of these foreign bodies, while its evacuation is made more difficult, so that by its stagnation in the duct dilatation of the latter ensues. Merz regards this elementary process as the onset of seborrhea.

In this stagnant sebum decomposition is not long in taking place and the mechanically dilated orifice —the degree of the dilatation is really extraordinary

—favors the development of a rich bacterial flora which finds an excellent culture medium in the altered sebum, as well as in the favorable theramic conditions offered. From the development of the bacteria, decomposition of the sebum makes rapid progress, characterized by the production of organic fatty acids. Merz is of the opinion that the bacteria constantly present are a secondary factor in the process, but many observers are of the opinion that seborrhea is a parasitic process.

Lassar has tried to show the parasitic origin of the disease by mixing the hair and seborrheic squamæ together in vaseline and then by repeated friction of this mass on the normal skin of a rabbit which resulted in the falling of the rabbit's hair, but Michelson has shown the fall of the hair and formation of scales can be obtained by friction with rancid fats without the addition of the products of seborrhea.

Sabouraud, Balzer, Bizzozero and others, who have tried to show that certain bacteria were the specific agents of seborrhea, have not been much more successful in their attempts. The supposition of a specific agent has been eliminated by Schamberg, who has been able to demonstrate that these bacteria are the usual inhabitants of the sebaceous glands without exercising any pathogenic action. Merz believes that these bacteria have no pathogenic signification unless they develop in abnormally large numbers. This exaggerated development is made possible on account of the favorable preparation of the soil by the process which has been referred to as taking place in the follicle. The masses of sebum, decomposed and riddled with bacteria, irritate the walls of the follicle which, on account of the rich vascular supply, readily react by an inflammatory hyperemia.

The immediate effect of this inflammation is an exaggerated production of sebum which is outwardly manifested by a more abundant discharge, in other words, seborrhea. At this phase, the sebum is principally composed of yats, masses of bacteria and horny cells. But by degrees this condition of affairs changes. The horny cells become more numerous and are the most important of all the elements, and from this time on the pathological process has entered upon the second phase.

Merz defines the second phase as the propagation of the morbid process to the deeper parts of the follicle, from the opening of the sebaceous gland to the papilla. While the first phase may be regarded as a preparatory one, the extension of the process to the deeper structures results in serious pathological consequences. In the first place, a parakeratosis and a hyperkeratosis arise in the sheaths surrounding the hair roots. The sheaths being the principal route of nutrition of the hair it can readily be understood that, following the process of parakeratosis, nutrition is made difficult and from this fact the papilla becomes compromised; it will invariably degenerate if the process continues for any length of time.

These two states, which are pathologically different, have likewise a perfectly dissimilar therapeutic and diagnostic significance. While the primary phase is relatively accessible to therapeutic agents and has a favorable prognosis, the second, on the contrary, is more resistant to medication and has a doubtful prognosis, especially if the affection has been present for some time.

Until recently, the results of treatment for loss of hair have been far from satisfactory because the affection for a long time offers only slight symptoms which are easily overlooked. Usually it is not the anomaly of sebaceous secretion, the abnormal dryness of the hair and scalp consequent upon the thickening and stagnation of the sebum in the follicle, or the increased fatty secretion which causes the patient to seek medical advice. The attention is attracted rather on account of the falling out of the hair which, however, may not begin until the lapse of several years. Consequently, treatment is not generally commenced until the second phase is reached, which has not a very favorable prognosis because then the organ has already become involved to an extent beyond repair. But, sometimes, it will be an acne of the face, developed simultaneously with the scalp affection that will bring the patient to the physician.

The scalp and face are frequently involved at the same time, but also often one without the other. The single localization of the process on the scalp is commoner than when the face alone is affected. On the other hand, in the majority of cases of seborrhea of the face the same process will be found on the scalp. It begins at about puberty, sometimes quite acutely, but is more prone to assume a latent evolution. It would not be in conformity with facts to say that it never or rarely occurs before puberty, because when one is well versed in the subject, it is surprising how many cases will be found among children. Merz says that he has often seen cases of seborrhea in children from the age of five on, as well as instances where the process did not appear until long after puberty. He further says that he has never seen the acute forms in childhood, while they do frequently occur during and after puberty. Merz also classifies the cases as follows in respect to the age of the patient: 1, infantile seborrhea; 2, juvenile or puberty seborrhea, and 3, late forms.

It is the infantile cases which have the most unfavorable prognosis if they are not treated in time and appropriately. At the age of eighteen years they may already cause falling out of the hair, both severe and lasting, and in these circumstances there is never any facial acne before the advent of puberty. These infantile forms only give rise to the most trifling symptoms during several years, but at puberty they undergo an acute aggravation. The patient will have then arrived at the second phase of the affection so that treatment then begun will no longer give good results. Often at this time the papillæ are seriously affected and it is too late to stop the progress of degeneration.

The symptoms of the onset of infantile seborrhea may merely take the form of very fine pellicles; they are very adherent to the scalp and can only be removed by soap and brush; or they may be fatty and soft, being easily detached. In spite of an energetic cleansing of the head, the pellicles always reform with a varying intensity. The formation of the pellicles may also cease spontaneously for a certain time and a cure is believed to have been attained. The use of soap and brush is a rational treatment as far as it goes, but in the majority of cases it is insufficient. Unquestionably, seborrhea may be cured by simple washing, but this is rarely successful.

It is certain that a process of desquamation similar to that met with on the skin exists on the scalp without in any way being related to seborrhea, but it is impossible to distinguish macroscopically these two kinds of pellicles. As a rule, any mild pellicle formation in children should be regarded as a product of seborrhea.

A differential diagnosis can be made microscopically between a normal pellicle and one resulting from seborrhea. In the former, it is a process of true keratinization, that is to say, the cells of Malpighi's mucous body penetrate slowly through the stratum granulosum and become transformed into horny cells by imbibition of keratohyaline and the loss of their nucleus. It is quite different in the case of a seborrheic pellicle. In this case the extension of the cells of the mucous body towards the exterior takes place so rapidly that imbibition of keratohyaline and destruction of the nuclei cannot take place sufficiently, therefore the cells on the surface are incompletely horny and nucleated. Consequently, a pellicle composed of such cells is consequent upon seborrhea.

Juvenile seborrhea—which is often accompanied by facial acne—has a better prognosis than the infantile form. The symptoms of the seborrhea of puberty are more marked; besides, the sentiment of personal vanity is somewhat developed at this age and more attention is given to looks, especially to facial acne. Therefore, as these cases are treated earlier the therapeutic results will be more favorable, but treatment must be continued for a long time if a durable amelioration or cure is to be expected. The same may be said of the late forms which also have a better prognosis. In all three forms the evolution of the affection is in a high degree chronic, even in cases with an acute onset.

This formation of pellicles present in infantile seborrhea and also in a similar way in other forms, may last for years, without any visible destruction of the hair being observed. The falling out of the hair commences gradually. Some hairs will be found on the brush; in the morning some will be found on the pillow and the increase of the loss of hair takes place so slowly that it is overlooked. Now, although these early symptoms may seem to be insignificant for some time, they nevertheless show that the second phase has begun to injure the papillæ and that treatment is absolutely urgent. This warning is frequently not observed, and it is only some time after that, in addition to falling out, the character of the hair itself changes. It becomes dull, loses its normal turgescence and often lies flat on the head soon after it leaves the follicle, giving the impression that it is withered. Besides, it does not grow long. The points are bifid and look as if crushed or fringed.

All this signifies that there are serious disturbances of the nutrition, most usually the consequence of advanced morbid changes in the papilla, therefore the prognosis is bad. The hair is lost and treatment must then be confined to saving the hair the least involved, because the morbid process does not develop equally all over the scalp and lying beside hairs that are beyond recovery others will be found less severely involved. In the cases where the sheaths of the root show only little parakeratosis and in which the papilla is little, if at all, involved, proper treatment may be successful, but in the more advanced cases the affection continues its progress. The stratum granulosum gradually disappears and the skin atrophies. The sudoriparous glands are degenerated, the sebaceous glands and muscular fasciculi disappear, while the connective tissue and elastic fibres increase. The skin having become bald is smooth and brilliant.

Microscopically, hairs dead from seborrhea cannot be distinguished from those which have fallen out naturally. They have an onion shaped root ending in a point and so far as can be seen are normal in their other characters. One think that is remarkable is the stability of the localization of baldness which occurs only on certain fixed parts of the scalp, while in other regions seborrheic alopecia never occurs. Many theories have been given to explain this fact. Elliott is of the opinion that those portions of the scalp lying upon muscles are never the seat of the process under consideration. He thinks that the play of the muscles favors the transportation of the blood and lymph to the parts situated above. Schem maintains that the food supply brought for the other parts which are situated directly on the aponeurotic galea is made difficult by the tension of the occipital and frontal muscles.

Merz considers that an unequal size of the orifice of the follicle is also a predisposing factor. One often meets, even when sebaceous stasis is not yet marked, very large openings far from the hair, so that the latter is no longer within its sheath but in a funnel, which favors the entrance of dust, bacteria, etc. This predisposing factor may explain why baldness is hereditary. These large orifices of the follicles are individual conditions which may be transmitted from one generation to another and therefore constitute an hereditary disposition which favors the development of seborrhea. This is therefore a strict indication for the resort to proper prophylactic treatment of the scalp from childhood. I here append a classification given by Merz, which sums up the different phases of seborrhea of the scalp up to the time that baldness has been reached:

FIRST PHASE.

1. Hereditary predisposition to seborrhea possible. 2. Penetration of dust, bacteria, etc., within the follicle. 3. Thickening of the sebum. 4. Mechanical dilatation of the follicular sac; excessive bacterial development; decomposition of the sebum. 5. Inflammatory reaction of the walls of the hair follicle.

SECOND PHASE.

1. Extension of the inflammation to the deep parts of the follicle. 2. Hyperkeratosis and parakeratosis of the sheaths of the root of the hair. 3. Disturbances of the nutrition of the hair. 4. Degeneration of the papillæ. 5. Atrophy of the skin.

LONDON LETTER.

(From our own correspondent.)

Women in the Medical Profession—Prize in Ophthalmology.

London, *January 3, 1921.*

The rush of candidates for admission to the medical schools of Great Britain is so great as to be embarrassing to those responsible for the management of such schools. The schools which admit women as well as men are presented with an interesting problem. This new factor of the situation was largely created by the wartime experiment of admitting women to medicine at several of the schools, on account of the number of medical men who were called to service under the colors. The men have now returned, but find that the women have come to stay. How is the problem to be faced by those institutions which allow female medical students within their walls? Are the women to be denied admission in the future, or are the vacancies to be divided, and, if so, in what proportion? It is said that the authorities are at the present endeavoring to evolve a definite scheme whereby exservice men will probably receive preferential consideration, but the settlement as concerns the rest is a more difficult and delicate matter by far.

Up to the time of the war women medical students were almost wholly concentrated in the Royal Free Hospital School for Women in London. After a good deal of discussion and some controversy it was resolved in 1917 to open the doors to women more generally, and the medical schools of University College Hospital, King's College Hospital, London Hospital, Charing Cross, Westminster, and St. Mary's hospitals, all of London, have taken in woman students. St. George's Hospital, London, did the same purely as a war measure, and has now again closed its doors to women. The Middlesex, Bartholomew and Guy's hospitals, London, have consistently and firmly refused to admit women.

An important reason why the problem is so hard to solve is that women are proving themselves apt pupils in the profession of medicine or surgery. The experience of the past few years has taught the lesson that not only is there a definite scope for women doctors in the fields of child welfare, public health work, and so on, but even in the practice of medicine generally. It has been estimated recently that if the total number of medical students in Great Britain now studying for their degrees or qualifications pass successfully, that women doctors will represent five per cent. of the total supply. Moreover, this percentage will increase rapidly, taking into consideration the fact that adoption of medicine by women is a development of comparatively recent times.

It is evident that in Great Britain, at any rate, women are now entering the medical profession in the same way and for the same reasons as men do, for the sake of earning a livelihood in a calling for which they have a liking and an aptitude, and the prejudice which existed against women doctors is dying out mainly because they have shown themselves to be fitted for the work. At many of the London hospitals there are both men and women resident medical officers on duty, women patients assigned to women doctors, men patients and violent cases to men doctors. Of course, at the Royal Free Hospital, London, which is the women's medical school, almost all the resident officers are women, and it is the usual thing for the women on duty to deal with all and any cases that come in. The task naturally often involves a considerable amount of physical endurance, and much surgical and medical skill and judgment. It has been established beyond cavil that women are quite competent to undertake such duties. At the Royal Free Hospital there are 450 women medical students, ninety-five of whom are new this session, although the lists are not complete.

It will be observed, then, that the question of women medical practitioners in Great Britain has become one of general importance. Owing to the lack of accommodation in the British medical schools, and the large number of students to enter, the schools have a difficult problem to solve in trying to reconcile the claims of men and women, respectively. However, it is certain that a feeling is growing that it is no longer possible to revert to prewar conditions in this direction.

In America women have not progressed so far along these lines as in Great Britain, but this phase of the feminist movement will assuredly develop. It is impossible to speak dogmatically on the subject, but it may be said that in certain branches of medicine and, perhaps, of surgery, women will find a place and be able to hold it. For child welfare work and for public health affairs they are peculiarly well adapted, and in many cases they are better fitted to attend members of their own sex than men. Indeed, there is no gainsaying the statement that women have demonstrated that they make capable medical practitioners, and that there are many medical positions which they are excellently qualified to fill.

* * *

Mr. W. Edmonds and Miss S. Edmonds, of Wiscombe Park, Colyton, have founded a prize in ophthalmology in memory of their brother, Nicholas Gifford Edmonds, who fell at Magersfontein on December 11, 1899. The prize, of the value of £100, will be awarded every two years for the best essay on a subject dealing with ophthalmology and involving original work. The competition is open to all British subjects holding a medical qualification. Subject to certain legal conditions, the management of the prize will be in the hands of a committee nominated biennially by the Medical Board of the Royal London Ophthalmic Hospital, which will select the subject of the essay and elect two examiners. The winner of the prize will have the option of giving a lecture on the subject at the Royal London Ophthalmic Hospital. As the subject of the essay will be announced two years before the award, ample time will be afforded for studying the literature, for thorough observation, and for carrying out experiments before sitting down to the actual composition of the essay. By their generous liberality Mr. and Miss Edmonds place the profession under a deep debt; their wish in founding the prize is that suffering may be alleviated, and it may be confidently anticipated that this end will be attained.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, JANUARY 22, 1921.

MAN VERSUS THE MICROBE.

There appears to be a reaction on the part of the medical profession against the dominance of the microbe. It has been the custom to attribute the occurrence of an epidemic of contagious disease to a certain microbe. For instance, when Pfeiffer isolated a germ during the epidemic of influenza in 1889 and succeeding years, it was widely proclaimed and is given in textbooks of medicine and in medical dictionaries as the specific cause of influenza. Some hold the view that it is not the specific germ at all, while others aver that it is only one of the microorganisms concerned in the production and development of influenza. Sir William J. Collins in the *Lancet* for December 11, 1920, discusses this question in an illuminating manner. So far back as 1889 he said: "If it be true that in the life history of the lowest of organic things lie the momentous influences which determine plagues and pestilences, it is reasonable to believe that in organisms whose cycle may be less than an hour, and whose rate of propagation is incalculable, evolution must be powerfully at work eventuating in the survival of those most fitted to their environment, and that in this, as in other directions, man's influence may modify natural selection and by acting in accordance with law may learn to conquer nature by submitting to her." In short, it is stated that we have been likely to regard microorganisms too much in the light of their fortuitous and unfortunate association with diseases of man and too little in the light of their own life history.

In spite of what appears to be strong evidence against the absolute specificity theory of disease practically all textbooks of medicine state explicitly or infer that such is the case. Collins describes the orthodox credo as running somewhat as follows: "I believe that diseases, especially those which are communicable, are due each to a specific microbe, which is always derived from a preexisting similar organism in a previous case of disease. That such specific diseases always breed true and never arise *de novo*. That immunity from attack can only be purchased by preventive inoculation either with the specific organism alive or dead or with a serum charged with a specific antitoxin derived therefrom."

On the other hand, Collins has long contended that specificity of diseases is relatively not absolute; that new species have evolved from time to time; that starting from common infective agency by variation and mutual selection specific diversities of type may emerge, and that, instead of always breeding true, aberrant and typical examples and nondescripts are commonly observed. That the condition of the blood and tissues of the body exposed to socalled zymotic or infective disease powerfully influences the virus of the disease to the extent of modifying, intensifying or nullifying the morbid process as soil influences the growth and results of the seed sown upon it. That the environment of the body also potentially affect its vulnerability or immunity from disease. That if the nature of the *materies morbi* of specific infective diseases be organic or microbic, such lowly organisms as have been casually associated with certain diseases are likely to be profoundly influenced by the soil upon which they are cultivated and are therefore peculiarly susceptible to evolutionary changes in the course of their rapid propagation and multiplication. That the pathogenetic properties of such organisms or viruses may be acquired, lost, modified, or varied during their serial cultivation in living bodies or in other culture media.

Seeing that the possible modes of reaction of the living body to noxious agencies or influences are limited in number and nature, similar or identical symptoms may be occasioned by different pathogenetic causes; while the same pathogenetic agencies may occasion different symptoms in different persons. That the first line of defence against invasion of the human body by infective diseases is a sanitary environment, pure air and water, good food, clean clothes and houses and that such environment promotes healthy living, which itself tends to raise the normal resisting powers of the body and the blood.

So many things have to be taken into account in the evolution and development of disease, that it is difficult to believe in the hard and fast specificity of microorganisms or, at any rate, of all. When bacteriology has not succeeded in demonstrating microbic causes in some of the most typical infective diseases, of which perhaps influenza may be cited as an example, it causes one to think and ponder. Some are veering to the belief that contagion may be in the nature of a chemical process.

Undoubtedly chemicophysics is throwing a bright light upon many dark and obscure nooks and corners and may in time revolutionize present day views as to the causation of infective disease. In any event, the absolute specificity theory of disease is being subjected to a good deal of criticism, some of which reads as if it were destructive and it seems as if an open mind is required by those who are delving into the secrets of disease. Such men should not be bound down by preconceived views or trammelled by favorite hypotheses but should be ready and willing, in the interests of science and humanity, to listen to any suggestions or advice which may seem likely to blaze a fresh trail, and to judge for themselves whether they are following a will o' the wisp or are on the high road to new discoveries. With regard to Collins's statement that healthy environment, nourishing food and so on, go a long way towards rendering the body resistant to the attacks of disease, opinion is unanimous. Living under healthy conditions is a *sine qua non* in the practice of preventive medicine. It is indeed the keystone of health.

THE PROBLEM OF THE REGISTERED NURSE.

The Chautauqua School of Nursing has appealed to the courts for protection for its graduates. A Supreme Court injunction has been issued, restraining the New York State Nurses' Association and the secretary of the New York State Board of Nurse Examiners from continuing to circulate any statement designed to create the belief that graduates of the school will be prohibited by the laws of the State of New York from practising nursing for hire, or that such graduates, or all professional nurses, must procure a certificate from the Regents of the State of New York.

The organized hospital trained nurses' associations have attempted to monopolize the nursing field. There are not enough hospital trained nurses to supply the needs of the community, and many of the sick and disabled are unable to pay the fees of these nurses. Must they do without nurses? Graduates from the Chautauqua school have supplied this need for many years. During the influenza epidemic the scarcity of nurses was the direct cause of many fatalities. During the war the greatest aid was furnished in the military hospitals by the auxiliary nurses. They were efficient after a few months' training, and their work saved thousands of lives.

Nurses graduated from the Chautauqua school fill an important need. There is no reason why the hospital nurses should fight them. There is no reason why they cannot work together in harmony, for the nurses of the school extend their services into many fields which the hospital nurses will not enter. There is plenty of work for all. There is no need to attempt a monopoly in a field of endeavor whose purpose is the good of sick mankind. The immediate financial gain should not blind the hospital nurses to the greater gain of health to individuals and to the community.

PHYSICIAN AUTHORS: DR. VIKENTY VERESAEV.

One of the foremost Russian intellectuals who paved the way for the overthrow of the house of Romanoff was Vikenty Smidovitch, a physician who wrote under the pen name of Vikenty Veresaev. Students of the causes which led up to the Revolution of 1917 declare his stories did more than the writings of any other author to put the Russian masses into the mood for striking against czarism, and to show them how to consolidate effectively for such a step. He was the guide, philosopher and friend of all the revolutionary groups of Russia during the years of their preparation for the big stroke that was to come. His writings, first to last, were sheer propaganda in fiction form. Every character in his stories, every incident, had for its purpose the driving home of the hard and bitter facts of life in old Russia. He did not care whether he amused or pleased, so long as he inflamed and instructed. S. Persky, in his *Contemporary Russian Novelists,* a prewar volume, points out that Veresaev "brought into the world of literature a series of characters who summed up the rising fermentation of new ideas and seemed to be the spokesman of those around whom the Russian revolutionary forces gathered, forces which up to that time had been scattered. He was born," continues Persky, "in the midst of the revolutionary movement and its ideas were an integral part of him. He was able to present its political opinions in such a way that their effect was tremendous. He described how the ground was being cleared for revolution and what should be done further to pave the way."

Veresaev is scarcely known outside his native country, but within that country his fame at one time overshadowed even that of such geniuses as Chekov and Gorky. His books answered a more general need than theirs. Most likely he never will be known widely outside of Russia, for his fiction is said to be a commonplace product. As an author he never was more than a second rater, and was read more for his political opinions than for his literary talent. "Each page of him was written to throw light on social questions, considered from a well defined point of view. The secret of his success"—again it is Persky who speaks—"rests mostly in the frank, sincere manner in which he approached certain problems of vital interest to the mass of Russians." Furthermore, he expresses a deep and tender sympathy for those who suffer and always is journalistically accurate in describing what he has seen and lived through.

Outside of Russia he is best known for his *Memoirs of a Physician.* This was his masterpiece, the cream of his literary output, despite the popularity in Russia of his novels and tales, and has been translated into practically all languages. These memoirs, the confessions of a doctor from the time of his earliest studies, deal with the many disheartening problems which confronted physicians in Russia a quarter of a century ago. In school he learns with astonishment of the vast number of maladies that afflict mankind, and is further astonished by the fact that medicine is unable to cure many of those maladies. Later he gives his observations in hospitals and other practice, and comes to the general conclusion that the first step toward rectifying the evils should be a change in the social organism.

"He views his profession with the eyes of a man discouraged and disheartened," says Dr. Henry Pleasants, Jr., "and shows us a conscience harassed and troubled by conditions he feels powerless to improve, leaving the reader floundering in a bog of hopeless pessimism. The book made many enemies by its frankness and angered those whose best interests were served in concealing the truth, but it shows how earnestly and faithfully physicians have endeavored to prove worthy of the trust imposed upon them."

It is only necessary to read the *Memoirs* to perceive the moral relation between Veresaev and the heroes of his stories. The medical profession never moulded the form and context of any writer of general literature more than it did his. His medical practice gave him the background for not only some but all of his stories. "There is not a single book that might not be a confession," says one critic, "for all he writes he has experienced himself." Disease and its ravages fill many of his pages. Misery, despair and crime are constantly portrayed. The poverty of the villages is painted in depressing colors. He is perhaps the gloomiest of all Russian writers.

Dr. Veresaev was the son of a Polish physician and Russian mother. He was born in Tula in 1867 and ten years later entered the local school, where he spent seven years. In 1884 he enrolled in the department of historical sciences at the University of Petrograd and got the degree of letters four years later. He then entered the University of Zhuriev (historic Dorpat) and began his medical studies. He got his degree six years later. Two years prior to that, however, in 1892, he served as a physician's assistant in an eastern province during a cholera epidemic and also did similar service in a mining district, where he saw a peasant revolt in which several physicians were killed and others burned by the mob. He has traced these sad events in his first story, *Astray,* published in 1896. This story brought him immediate fame and was followed by a series of stories dealing with peasant and factory life, and outlining the various phases of the revolutionary movement between 1880 and 1890.

His theory was that peasants could better their position only by getting rid of the land in order to become free proletarians. He represents the peasant as full of infinite egoism, without any spirit of solidarity, sacrificing everything for the love of his sorry little house and his morsel of ground, which was insufficient to nourish him. Veresaev's first medical practice was in his native city, Tula, after which he became a house surgeon in the Botkin Hospital in Petrograd, where he served seven years, until 1901, when he was expelled from Petrograd and Moscow because he had been one of the signers of a petition protesting against the brutal attitude of the police during a student demonstration. Thereafter he lived successively in Italy, Germany and Switzerland, where he practised his profession among the colony of Russian political exiles at Geneva. During the Russo-Japanese war he served as a surgeon in the Manchurian campaign and his story, *In the War,* details his experiences in the moving hospitals and the terrible sufferings of the Russian muzhiks.

THE REASON WHY.

All drug addicts can give a reason for beginning, one quite satisfactory to themselves, but they rarely furnish one for leaving off. Some, like Professor Wood, of Edinburgh, say frankly: "I take it, sir, because I am a hedonist." Wilkie Collins took it twice a day for twenty years, saying it stimulated his brain and steadied his nerves. Bulwer Lytton gave the same reason. Rossetti's young wife began to take it for nervous exhaustion, and Rossetti himself, greatly pleased with "the newly found drug, chloral," began with ten grains and finally ruined his health. One most amusing incident as to reasons happened with Coleridge and De Quincy. The first said he had to take it for rheumatism, and wrote expostulatory letters to the latter, urging him to give it up. De Quincy was angry, and said: "I have told the reader most truly that not any search after pleasure, but mere extremity of pain from rheumatic toothache drove me to the use of opium. Coleridge had simple rheumatism. Mine, which raged for ten years, was rheumatism in the face, combined with toothache. This I inherited from my father." He wrote to Coleridge, saying that simple rheumatism was not sufficient reason, but, with toothache added, any man had enough excuse, for there was no pain so acute. It was often underestimated because it had never ended fatally and often ceased suddenly. De Quincy was unacquainted with what the modern dentist sees in that wicked tooth which has its own way in a germ laden mouth.

OPTICAL ABUSES.

It is an old and approved motto in medicine that any therapeutic procedure should at least not do harm. Such a rule does not seem to govern many opticians, though in their practice if they do not do good they are quite likely to injure. There has come to our attention, within a few months, the following cases: A student had suffered from headaches since having his lenses broken and replaced. Examination showed that the lens for the right eye had been placed in front of the left eye, and that for the left in front of the right. The removal of the glasses, which were little needed, cured the headaches. A young lady wearing glasses was, in the course of a routine examination, tested for vision, which was found to be normal. The glasses were not lenses, but of plain glass, and were fitted "because her pupils were too large." A boy of twelve with marked strabismus was found with similar glasses fitted at high cost to "cure" the crossed eyes. A middleaged woman was having much trouble with her new bifocals. She could not use them for near work without great discomfort. Examination revealed that the nosepiece was so wide as to throw the lenses for near work out of line of vision.

A routine examination of a hundred people, in some parts of the country at least, will show many sufferers from the work of ignorant or unscrupulous glass fitters. A large number of school children are the worse for carelessness in prescribing and in fitting of glasses, and many are wearing glasses years after they have outgrown them. On this account, if for no other, there is need of more prophylaxis in schools. In spite of the fact that medical inspection finds fewer cases of imperfect vision now than formerly, there are more defects found in children of higher than of lower grades. Many schools are still badly lighted and much night study is urged. It is evident that adult patients who wear glasses, as well as those who do not, should be examined by the physician to whom they come for ills referable to eyestrain, to learn whether their glasses are appropriate. Above all, the conscienceless fitter of glasses needs to be further squelched in his work by public measures. As a penalty for his misdemeanors he might appropriately be punished by being made to wear misfitted glasses. The eye is too delicate and too important an instrument to receive other than the best of treatment.

A UNIQUE CASE.

It is often urged as consolation in sickness or other trouble, that there are dozens, thousands, equally or even more afflicted in a similar way. The nature of an invalid is well seen by the way this consolation is taken. He may cheerfully enter into the community of suffering if unavoidable. He may be plunged into deeper dejection because sorrow and disease are so common. He may deeply resent his claim to being a unique case disputed, because he morbidly enjoys the distinction of being more diseased than others. Watch the egocentric dilating on his case to friends: every detail is dwelt on, particularly the interest of the doctors! A sympathetic listener will tell of one who had precisely the same symptoms, even worse. The face of the first speaker falls. He gives an incredulous sniff and raises his eyebrows. He is annoyed and relapses into silence. It is the same with a chronic invalid if she is put in the shade by someone in the family being taken ill. She will even cry, pretending her tears are those of sorrow for the invalid, whereas they are drawn by jealousy, and perhaps stay in bed in case relatives should assume she is able to help. Such patients are the despair of every doctor, because they are afraid that cure would deprive them of the additional notice and care they so thoroughly enjoy, while secretly doing their best to avoid health. Pretending to grave symptoms seems to them such a nice, lazy way of gaining notoriety, because they can always get a reputation for unselfishness by saying how they would love to help if their health permitted.

News Items.

Personal.—Dr. Alfred Gordon, of Philadelphia, has been elected a member of the Neurological Society of Paris, France.

Damages for Blindness Due to Wood Alcohol.—A verdict of $30,000 damages was returned in the Circuit Court of Chicago on January 14th in favor of the plaintiff, who was made blind by drinking wood alcohol.

Spanish Medical Journal Changes Name.—Announcement is made by the publishers that the *Revista de Medicina y Cirugia Prácticas,* a monthly periodical published in Madrid, has changed its name to *Archivos de Medicina, Cirugia Especialidades.*

Hospital for Criminal Insane in Baltimore.—The State Lunacy Commission has submitted to the Board of Public Works plans for the construction of a hopsital for the criminal insane. For the building of such an institution $100,000 has been provided in the public improvement loan of $1,500,000.

Historical Medicine.—The Section in Historical Medicine of the New York Academy of Medicine will hold its next meeting on Monday afternoon, January 31st, at 5 o'clock. Dr. Walter Eyre Lambert will present a History of the New York Eye and Ear Infirmary, and an open discussion will follow on the development of ophthalmology in New York city.

Harvey Society Lectures.—The sixth lecture in the series will be given Saturday evening, January 29th, at 8:30 o'clock, at the New York Academy of Medicine, by Sir Arthur Newsholme, resident lecturer in charge of Public Health Administration, School of Hygiene and Public Health, Johns Hopkins University. His subject will be National Changes in Health and Longevity.

Brooklyn Cardiological Society.—The second meeting of this society will be held Monday evening, January 31st, at 8:30 o'clock at the residence of the president, Dr. William J. Cruikshank, 102 Fort Greene Place, Brooklyn. The paper of the evening will be read by Dr. Harold E. B. Pardee, of Manhattan, his subject being the Field of Usefulness of Polygraph and Electrocardiograph in the Diagnosis of Cardiac Disease.

Reception to Dr. Keen.—On Thursday evening, January 20th, a dinner followed by a reception was given in honor of Dr. William W. Keen at the Bellevue-Stratford Hotel, Philadelphia, by his medical colleagues. Dr. George E. de Schweinitz acted as toastmaster and among the speakers were Dr. Faunce, of Brown University; Dr. J. Chalmers da Costa, Hon. David J. Hill, and Dr. William H. Welch, of Johns Hopkins University.

Reports from State Hospitals Show Increase in Alcoholism.—Dr. Menas S. Gregory, of the psychopathic department of Bellevue Hospital, is credited in the public press with the statement that a study of reports from state hospitals shows that serious cases of alcoholism are on the increase and that there has been a startling number of cases of insanity resulting from what has been called whiskey madness. Dr. Gregory is reported as saying that alcoholism has increased here 100 per cent.

Bronx Hospital.—At the last meeting of the Medical Board of the Bronx Hospital and Dispensary, Dr. W. J. Robinson and Dr. Martin Rehling were reelected president and secretary respectively.

Hospital for Joint Diseases.—At a special meeting held on November 14, 1920, the board of managers of the Hospital for Deformities and Joint diseases, situated at 1919 Madison Avenue, New York, passed a resolution recommending changing the name of the corporation to the Hospital for Joint Diseases. The necessary papers were filed with the Secretary of State and the use of the new name was authorized from December 1st.

Norwegian Lutheran Hospital Approved by College of Surgeons.—At a "smoker" given on January 10th to the medical staff of the Norwegian Lutheran Deaconess's Home and Hospital, Brooklyn, by the board of managers, a letter was read by Dr. John C. Bowman, of the College of Surgeons of North America, stating that this institution would appear in the final list of approved hospitals. President Larsen occupied the chair and spoke for the institution, and addresses were delivered by Dr. Robert E. Coughlin, Dr. Lewis S. Pilcher, and Dr. H. Beeckman Delatour.

Cancer Committee Formed in Cincinnati.—An organization known as the Divisional Council on Cancer Control was launched in Cincinnati on November 4, 1920, under the joint auspices of the City Health Department, the Academy of Medicine, and the Public Health Federation, for the purpose of carrying on an intensive educational campaign in the city of Cincinnati. Dr. J. Louis Ransohoff is chairman of the committee and among its members are Dr. William H. Peters, Dr. Nora Crotty, Dr. Louis Schwab, Dr. Dudley W. Palmer, Dr. Mark A. Brown, Dr. Robert Carothers, Dr. Julien E. Benjamin, and Dr. Thomas P. Hart.

Association of Cardiac Clinics.—A meeting of this association was held Wednesday evening, January 26th, at the New York Academy of Medicine. Dr. May G. Wilson presented a paper on the Equivalent of Ordinary Exertion; Dr. Joseph H. Barach, of Pittsburgh, read a paper on Etiology of Cardiovascular Affections, and Dr. Paul D. White, of the Massachusetts General Hospital, Boston, read a paper on the Diagnosis of Chronic Valvular Disease. Among those who took part in the discussion were Dr. Lewis A. Connor, Dr. Alexander Lambert, Dr. E. Libman, Dr. Theodore B. Barringer, Jr., and Dr. B. S. Oppenheimer.

Medical Society of the County of New York.—A stated meeting of this society will be held in Hosack Hall of the New York Academy of Medicine, on Monday, January 24, 1921. The program will consist of the inaugural address of the president, Dr. George Gray Ward, Jr., and the following papers: Severe Rachitic Involvements of the Thorax and Certain of Their Consequences, by Dr. Edwards A. Park and Dr. John Howland, of Johns Hopkins Hospital, and the Treatment of Rickets, Especially the Results Accomplished by Means of Codliver Oil, with a lantern slide demonstration, by Dr. John Howland. Among those who will take part in the discussion are: Dr. Alfred F. Hess, Dr. Oscar M. Schloss, and Dr. Walter Lester Carr.

Hiccough Epidemic Alarms London.—The epidemic of hiccoughs is spreading through London, and the medical profession is taking a serious view of its progress. There are twelve cases in one hospital. Some of the victims are on the verge of collapse after constant hiccoughing for days. No medical explanation of its cause has been given.

American Society for the Control of Cancer.—The annual meeting of the society will be held at the Executive Office, 25 West Forty-fifth Street, New York, Saturday afternoon, January 29th, at four o'clock. The chief business will be the election of officers for the coming year, receiving the report of the Budget Committee, and the election of directors to fill vacancies of those whose terms have expired.

No Appropriation for Long Island Hospital for Disabled Soldiers.—The plan for a $3,000,000 hospital for disabled soldiers on the Creedmoor site in Queens has been killed by the U. S. Senate Committee on Appropriations. The original plan was to build the hospital for State appropriation and the Federal Government to lease it, paying instalments enough to cover the entire cost of the project and then turn the hospital back to the State.

Shortage of Nurses in New York.—So great is the dearth of nurses in several of the New York City hospitals that the New York County Chapter of the Red Cross has been asked to send out a general call for volunteers to act as nurses' aids and relieve the situation.

The institutions hardest hit are the Metropolitan Hospital and the City Hospital on Blackwell's Island and the Public Health Service Hospital at Fox Hills, S. I., which is crowded with ex-service men, for the most part chronic cases. The Red Cross estimates that it can place as many as 500 women.

Damages for Prenatal Injury.—The Appellate Division of the New York Supreme Court, by a vote of three to two, decided recently that a child is entitled to recover damages for a prenatal injury. The court heard a suit in behalf of an infant, against the owner of property, because the child's mother had fallen through an open coal hole in the sidewalk just before the birth of the child, which caused permanent prenatal injuries to the infant.

Justice Merrell, writing the prevailing opinion, ruled that the rights of human beings do not necessarily originate at birth, but in many cases precede birth in their origin.

Board of Health Demands Registration of Patent Medicines.—At a meeting of the Board of Health of the Department of Health of the City of New York, held on Wednesday, December 29th, resolutions were adopted governing the registration of patent and proprietary medicines and recommending the amendment of Section 117 of the Sanitary Code. According to these regulations, manufacturers must file statement of quantity of scheduled drugs and no proprietary preparations containing harmful drugs can be registered. All applications for a certificate of registration shall be made upon official application blanks supplied by the health department and signed by the applicant. Once a month a list of registered proprietary and patent medicines will be published by the department.

New Million Dollar Building for Peoples Hospital.—The Peoples Hospital, now situated at 203 Second Avenue, has purchased as a site for a new million dollar hospital 222 to 232 East Fifteenth Street. The property which was purchased from various owners consists of five four and five story old fashioned private dwellings having a frontage of 116 feet on the south side of Fifteenth Street. It is hoped that twenty stories may be permitted, though there is some fear that the zoning ordinance may restrict the structure to fourteen. Accommodations will be provided for 500 patients. Every modern hospital development will be included in the new home. The work of demolishing the old buildings on the site will begin, it is planned, in six months. Probably two years will be consumed in completing the new building for occupancy. After that time the present hospital will be used as a dispensary.

Meetings of Local Medical Societies.—The following medical societies will meet in New York during the coming week:

TUESDAY, *January 25th.*—New York Academy of Medicine (Section in Obstetrics and Gynecology); New York Dermatological Society; New York Medical Union; Metropolitan Medical Society of New York City; New York Otological Society; New York Psychoanalytical Society; New York City Riverside Practitioners' Society (annual); Therapeutic Club (annual); Valentine Mott Society; Washington Heights Medical Society; Clinical Society of the Hospital and Dispensary for Deformities and Joint Diseases.

WEDNESDAY, *January 26th.*—New York Academy of Medicine (Section in Laryngology and Rhinology); New York Society of Internal Medicine; New York Surgical Society; Brooklyn Pediatric Society.

THURSDAY, *January 27th.*—Hospital Graduates' Club of New York (annual); New York Physicians' Association; Ex-Intern Society of the Methodist Episcopal Hospital, Brooklyn.

FRIDAY, *January 28th.*—Academy of Pathological Science; Audubon Medical Society (annual); New York Clinical Society; Society of Alumni of Sloane Hospital for Women; Brooklyn Society of Internal Medicine; Hospital Graduates' Club of Brooklyn (annual).

◆

Died.

BOARDMAN.—In Boston Mass., on Tuesday, January 11th, Dr. William E. Boardman, aged seventy-six years.

CAULKINGS.—In Hornell, N. Y., on Tuesday, January 4th, Dr. Frank L. Caulkings, aged seventy-three years.

DE LAP.—In Gloucester, N, J., on Thursday, January 6th, Dr. W. L. De Lap, aged sixty-eight years.

FINLEY.—In Brooklyn, N. Y., on Wednesday, January 5th, Dr. Eugene Francis Finley, aged fifty-two years.

GORDON.—In Los Angeles, Cal., on Wednesday, January 5th, Dr. J. S. Gordon, aged sixty-six years.

HELME.—In Albany, N. Y., on Tuesday, January 4th, Dr. Thomas Helme, of McKownville, aged fifty-three years.

HOWLAND.—In Cortland, N. Y., on Saturday, January 1st, Dr. Frank P. Howland, aged eighty years.

MCFADDEN.—In Philadelphia, Pa., on Sunday, January 9th, Dr. William McFadden, aged seventy-six years.

MURPHY.—In Mobile, Ala., on Wednesday, January 5th, Dr. Thomas Charles Murphy, aged seventy-seven years.

NOLAN.—In Philadelphia, Pa., on Wednesday, January 5th, Dr. Edward James Nolan, aged seventy-four years.

O'DEA.—In Stapleton, S. I., on Wednesday, January 12th, Dr. James J. O'Dea, aged eighty-four years.

ROGERS.—In Cascade, Wis., on Thursday, December 23rd, Dr. A. C. Rogers, aged seventy-seven years.

Book Reviews

VENEREAL DISEASE.

Prevention of Venereal Disease. By Sir ARCHDALL REID, R. B. E., M. B., F. R. S. E. With an Introductory Chapter by Sir BRYAN DONKIN, M. D., F. R. C. P.

It may be premised before entering into a consideration of this book that the author knows well whereof he speaks. Sir Archdall Reid has had most favorable opportunities for investigating and studying venereal disease in all its phases and he is excellently qualified to take the best advantage of these opportunities. He is not only a scientific man of the first rank, but is endowed also with sound common sense, a quality not infrequently absent from men of science. As witness of this combination of scientific and common sense, his book on alcoholism may be referred to as the most able presentation of the subject ever given.

His work at Portsmouth, the British naval port and a hot bed of venereal infection, has convinced him that venereal disease is easily prevented, that is, if proper and adequate preventive measures are applied early enough, and his war experience has taught him that such measures are at hand and indeed have been already practised on a large scale in various parts of the world and always with success. He therefore gives as his emphatic opinion that the prevention of venereal disease is a certainty in the near future and that with official help it will come quickly in Great Britain; without such help more slowly but come it will. He further states, what is obviously true, that it depends upon the diffusion of a little simple knowledge of a kind that spreads rapidly, and which once diffused is diffused forever.

Consequently, this book of Sir Archdall Reid should give it a start with the public and should aid in its diffusion immensely. Until the public is educated as to the real state of affairs with regard to venereal disease and the most effective means of prevention, it is hopeless to expect much progress in discussing the book. It should be said at once, that it has been written mainly to propagate the views of the British Society for the Prevention of Venereal Disease but also that the author has become absolutely assured by a wide experience that these views are based on a firm foundation. These views are that reliable disinfectants should be used as promptly as possible after intercourse, that their value is effective in proportion to the speed with which they are used after the need for them has arisen. According to Sir Archdall Reid, and his testimony is undoubtedly reliable, many doctors putting these principles into practice had reduced the venereal disease, previously rife among their charges, almost to the vanishing point. As the author says, "obviously there must be something peculiar in the methods that achieved success in the midst of prevailing failure."

The first chapter is taken up with impressing upon the reader the urgency of the venereal problem in Great Britain. There is no time nor space here to dwell long upon this aspect of the subject. In the words of the author venereal diseases are the most prevalent by far of all the more serious diseases. There are few, if any, families of which some members have not been infected. Together they constitute a prolific, if not quite the principal cause of poverty, insanity, paralysis, blindness, heart disease, disfigurement, sterility, disablement and the life of pain to which many women are condemned. Our hospitals, asylums and homes for the broken are crowded with their victims. All this is true with respect to Great Britain and to all other countries to a greater or less extent. It must always be borne in mind that the venereal problem is an international one.

The succeeding three chapters deal with the psychological phase of the problem which provide fascinating reading. Chapter IX in which Reid describes his campaign against venereal diseases among troops in Portsmouth, who were all to a greater or lesser extent birds of passage, is of quite exceptional interest. The burden of this chapter is that Reid by precept and practice held on to the old saw that prevention is better than cure. "Disinfect, at once, at once," was his constant refrain. As for the disinfectants to be used, it is stated that ordinary antiseptics are superior to calomel if quick action be taken.

A goodly part of this book is devoted to a criticism of the method of the British National Council for Combating Venereal Disease and to British official measures generally. The Council is averse to what may be termed direct prophylaxis, declaiming that the introduction of such a scheme into a civilian population would be tantamount to affording opportunities for unrestrained vice. The main points in the book before us are that the public must be educated with respect to the venereal diseases and the best means of prevention and it is insisted that the most effective measures are disinfection as soon as possible after intercourse. To say that the book is well worth reading is faint praise, to say that it ought to be read by every adult would not be praising it too highly. Of course, there will be many at variance with the views expressed.

However, it should not be forgotten that Reid has had a very wide practical experience with the tenets he advances. He can bring strong clinical evidence in support of his contentions, which is after all the supreme test. As the venereal question is international, it concerns America quite as much as it does Great Britain, and, therefore, a book the contents of which are founded upon the results of experience, should be welcomed and studied in this country.

Unless direct prophylaxis is comprehended and discussed by the medical profession and the public, no decision can be made on its merits and drawbacks. It may be the means of the salvation of the race or it may be found to be comparatively useless in civil life. In any event, it should be discussed and understood, and not tabooed as a subject not fit to speak of. Sir Archdall Reid's book presents the question from the point of view of prompt prophylaxis, with directness and lucidity greatly to be commended, and certainly is of great educational value.

NEUROPSYCHIATRY.

Shell Shock and Other Neuropsychiatric Problems. Presented in 589 Case Histories from the War Literature, 1914-1918. By E. E. Southard, M. D., Sc. D., Director (1917-1918) U. S. Army Neuropsychiatric Training School (Boston Unit); Late Major, Chemical Warfare Service, U. S. Army; Bullard Professor of Neuropathology, Harvard Medical School; Director, Massachusetts State Psychiatric Institute of the Massachusetts Commission on Mental Diseases. With a Bibliography by Norman Fenton, S. B., A. M.; Sergeant, Medical Corps, U. S. Army (Assistant in Psychology to the Medical Director, Base Hospital 117, A. E. F.); Late Intern in Psychology, Psychopathic Department, Boston State Hospital; Assistant in Reconstruction, National Committee for Mental Hygiene. And an Introduction by Charles K. Mills, M. D., LL.D., Emeritus Professor of Neurology, University of Pennsylvania. Illustrated. Boston: W. M. Leonard, 1919. Pp. vi-982.

Southard's voluminous study of shell shock forms in some respects an outstanding work. He has spared no pains to glean his material from eminent neuropsychiatrists who dealt at first hand with these disorders arising during the war. There is not to be found, therefore, any other such abundant material in actual number of case histories. He has also set forth in an unprejudiced manner all the possible symptoms that become manifest, with no attempt dogmatically to place them under one or another predetermined diagnosis. They are left for future study from the several points of view they suggest.

For the writer is openminded enough to act upon the impression his researches make upon him. He becomes more firmly convinced of the wide range of possibilities in variety, in interrelation, in sequence of cause and effect, which may be subsumed under one such nonexplanatory term as shell shock. He even welcomes the term for its convenience to the lay mind, containing as it does just enough indication of more definite factors to turn attention to professional assistance. At the same time he believes that it has by the time of writing become a sufficiently denoting term to the neuropsychiatrist to remind him that it serves as a convenient cover for endless details of diagnosis and treatment extending in every direction.

He presents a weight of evidence to show the necessity of delimiting and differentiating the phenomena appearing under it in order that syphilitic disorders, toxic psychoses, epilepsies, dementia præcox, the cyclothymias, the psychoneuroses, shall not pass undiscovered. Phenomena pertaining to any of these affections may already be present and must not be taken as direct result of shell shock. These affections may predispose to disturbance following actual shock, or they themselves may be roused from latent to active form. All these facts create questions of importance from the medical, the military, the legal point of view.

Thus shell shock comes to be recognized as only a new term for an old state of things, a new possibility arising under special conditions wherein all sorts of neuropsychopathic phenomena are possible. Under these new conditions much has been learned. Much more has presented itself as fertile material for further consideration.

Southard lays stress upon the minute distinction which has arisen largely from Babinski's work, between physiopathic and psychopathic disorders. He still fails to discern that close relationship between the two, through unconscious psychic stimulation of physiological paths and reaction in turn of the physiological upon the psychic. There is also the same old unenlightening use of such terms as psychasthenia and the like, which cloaks the need for this deeper penetration into dynamic factors. As a compendium of widely collected descriptive material offered as a stimulus to further study, the book remains as a monument of the indefatigable energy and the alert mind of one whom the profession cannot forget.

VACCINATION.

Vaccination in the Tropics. By W. G. Kind, C. I. E., Colonel, I. M. S. (Retired), Late Sanitary Commissioner with the Government of Madras, and Superintendent General of Vaccination and Inspector General of Civil Hospitals in Nurma. Illustrated. London: Tropical Disease Bureau, 1920. Pp. vi-64.

Inoculation, vaccination, smallpox, terms which everyone thought they knew all about, are only the doors to deep studies of how they variously affect men of different races, how they are affected by climate, the safest methods of getting and conserving good strains of vaccine and the periodicity of epidemics, all of which study advances us a long way since the days of 1902 when French doctors held vaccination parties and, with twenty or thirty ladies assembled, walked around inoculating on unsterilized legs with an unsterilized instrument.

What complete mastery of all these aspects of vaccination means, what conscientious research involves, can be learned through W. G. King's book, written at the request of Viscount Milner, Secretary of State for the English Colonies, for distribution to the governments of the tropical African dependencies. He first deals with the subject from a point of view which will rouse all men —that is, the money loss caused by an epidemic.

One difficulty about the animal vaccine in tropical climates is that the exaggerated conditions of heat and alternate dry and moisture saturated atmospheric states demand close supervision by responsible men giving their whole time; otherwise, successful cultivation of vaccine will be hopeless. Suitable vaccine stations, food and quiet for the animals, great care in transmission, are all necessary. The influence of diet on the nature of vesicle production is also very great. The staff should be well chosen, the selection of calves most careful. Just as the veterinarians have found neurasthenic cows which needed a rest cure, so cheerful surroundings are necessary for the anteinoculated calves, who are very susceptible to rough treatment, even loud voices.

The rejuvenation section shows the various methods compared, and the factors in degeneration. The preservation of animal vaccine presents difficulties that no doctor in the temperate zone can quite appreciate. The inclusion of Noguchi's method of purification of vaccine is a valuable adjunct to the clearly put statements in this book and the whole will be welcomed by the medical sentries in opposing the advancement of the dreadful disease.

MILITARY SPYING.

The Secret Corps. A Tale of Intelligence on All Fronts. By Captain Ferdinand Tuohy. New York: Thomas Seltzer, 1920. Pp. 289.

Spying and spy catching seemed a comparatively simple matter in ancient times, but today science aids both catcher and spy, and has created a hundred ways of detection and escape which keep the intelligence departments of all nations unceasingly on the alert. Away back we see Judith, "beautiful in her countenance and witty in her words," calmly going into the enemy's camp to beguile Holofernes, and Joshua, falling a prey to the pretended ambassadors who "came with old wine bottles, old and rent and bound up; with old shoes and clouted upon their feet, and old garments, and the bread of their provision dry and mouldy, saying, 'we be come from a far country,'" whereas the rogues dwelt quite near. The Hague law of those days must have been compelling, for Joshua, having passed his word to save them, simply detained them as hewers of wood and drawers of water for the temple.

Of course, during the war it came to be a case of being suspected of being suspected, even as hundreds were executed during the French Revolution for unintentionally doing slightly abnormal things. This book will evoke gratitude and admiration for its revelation of the espionage work done, and our consequent safety. It would have been curious if, for one hour, the whole mechanism, crossing, running parallel, submarine, miles high, winged, vocal, written, signalled, could have stood out in relief, to let us see the marvelous ingenuity displayed and the risks run.

It is well pointed out how much power a queen has. Even a foolish princess on the throne of a foreign country is an agent who has access to cabinet documents, and to cabinet councils; who can send the secrets of state to the land of her fathers. In the late war, German or Austrian women were on the thrones of Russia, Greece, Sweden, Spain (Queen Mother), Rumania (Carmen Sylva), and Bulgaria, while a German prince consort ruled in Holland.

The Grecian queen, Sophia Dorothea, surrounded herself with German women, kept Greece out of war, and established a complete espionage bureau behind the lines at Salonika, even through the lines. The story of court intrigue at Athens is one of the most amazing pictures of the whole war. It was intrigue, corruption, and seduction in their most outrageous forms.

The spy organizations had to be divided up into zones, obviously necessary, if we consider even one zone—the British, in France and Flanders with an abnormal population due to many hundred thousand refugees, Flemish, French, and Belgian, and added to these three or four million regular inhabitants, the British spy zone meant 800 communes, each covering about five miles. The book abounds with the unexpected. Once the truth was sometimes so obviously the truth that the Germans, intercepting the message, concluded it was not the truth or it would not have been sent, which was exactly what the English thought they would do. Again, on the second day of Loos, train after train steamed up the German lines, twenty-five of them, each train holding 800 men. The English plans were remolded. It was faked "railway activity" for the trains were empty! Two years later, General Byng's November battle for Cambrai, there was great enemy activity, hundreds upon hundreds of lorries quite observable. Clearly the enemy was being moved into a new reserve. Headquarters was rung up. "Carry on," came the answer. "They played this trick before. The lorries are empty."

They were not!

The book keeps one all alert. A continued reading will make a man involuntarily get up from his chair very cautiously and cast a suspicious eye even on his intimate associates and surroundings until he remembers the world is at peace!

POTTERISM.

Potterism. By Rose Macaulay. New York: Boni & Liveright, 1920. Pp. x-227.

Unconsciously the reader gathers in the opening pages what Potterism is, but is rather relieved to get a clear definition from the author on page 66:

"Potterism has, for one of its surest bases, fear. The other bases are ignorance, vulgarity, mental laziness, sentimentality and greed. The ignorance which does not know facts, the vulgarity which cannot appreciate values; the laziness which will not try to learn either of those things; the sentimentality which, knowing neither, is stirred by the valueless and the untrue; the greed which grabs and exploits; the fear of public opinion, the fear of scandal, the fear of independent thought, of loss of position, of discomfort, of consequences, of truth."

There are only two characters who are untainted by Potterism — Arthur Gideon, of Jewish extraction, editor of *The Fact,* and Katherine Varick, an Oxford girl enjoying a chemical research scholarship. So, saving these two, the world of this book is made up of the Potter twins, Jane and Johnnie, who professedly hate Potterism but stealthily, even openly, enjoy its fruits, Papa and Mama and Clare Potter, a newspaper magnate, an author, and a nonentity, their clergyman son, Frank, Hobart, editor of a Potter paper, and Jake, a young West End vicar of "moderately aristocratic lineage" but antipotterist.

There is no subtle persuasion against Potterism woven into the story. The characters are drawn in a subcynical, sagacious, humorous fashion, which amuse, but makes readers flinch a little. They seem to be getting too intimate a view of their friends. It would have been well if a deeper discernment of all that is noble and true had been joined to the writer's keen insight into human nature and touched her strong desire for truth. In describing Gideon after he has (supposedly) knocked Hobart downstairs and killed him, she voices the old surprised inquiry as to whether the good man can suddenly or deliberately walk in miry ways, whether the low-minded and repulsive man can produce valor and virtue from the empty pockets of his shabby, filthy garments, for many disbelieve this, despite the annals of asylum and prison. If Rose Macaulay can draw such clever realistic pictures of men as they are, it is a safe prediction to say her next work will contain a few men as they might be, just to tempt our dusty souls into more breezy, sunlit ways.

Some little, well, not errors, but ungraceful expressing, will not appear in her second book, e. g.: . . . one doesn't know enough; one hasn't learnt or lived enough to be first hand; and one lacks selfconfidence. But by five or six and twenty one should have left that behind. One should know what one thinks, and what one means. . . .

"A woman can be a man's friend all their lives, but a man, in nine cases out of ten, will either get tired of it or want more."

There was no weekly which caused Edward VII to chuckle more heartily than *Modern Society,* a paper which consistently attacked the rich, routed out all scandals in high life, and referred to Queen Victoria as Mrs. Little Britain and the Heir as "Bertie," and it is just possible that smug Potterites, who live in words not deeds, and are yet not too selfsatisfied, will enjoy and profit from this book. Nearly everyone will be glad to have a name given to the selfdeception which blindly applauds that which it uneasily condemns, unconsciously echoing the wish:

> . . . . that there might in England be
> A duty on Hypocrisy,
> A tax on humbug, an excise
> On solemn plausibilities.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

SAN CRISTOBAL DE LA HABANA. By Joseph Hergesheimer. New York: Alfred A. Knopf, 1920. Pp. 255.

TWENTY-SEVENTH ANNUAL REPORT OF THE MANAGERS AND OFFICERS OF THE CRAIG COLONY. Craig Colony Press, 1920. Pp. 84.

THE DEVIL'S PAW. By E. Phillips Oppenheim. With Frontispiece by H. Weston Taylor. Boston: Little, Brown & Co., 1920. Pp. 295.

THE PRIVILEGE OF PAIN. By Mrs. Leo Everett. Introduction by Kate Douglass Wiggin. Boston: Small, Maynard & Co., 1920. Pp. 105.

THE SPOILS OF THE STRONG. By Eleanor Talbot Kinkead (Mrs. Thompson Short). New York: The James A. McCann Company, 1920. Pp. 308.

THE HUMAN ATMOSPHERE. By Walter J. Kilner, B. A., M. B. (Cantab.), M. R. C. P., etc., Late Electrician to St. Thomas's Hospital, London. With Sixty-four Illustrations. London: Kegan Paul, Trench, Trubner & Co., Ltd., 1920, and New York: E. P. Dutton & Co., 1920. Pp. vii-300.

AIDS TO OSTEOLOGY. By Philip Turner, B. Sc., M. B., M. S. (Lond.), F. R. C. S., Assistant Surgeon, Guy's Hospital; Teacher of Operative Surgery in the Medical School. Second Edition. New York: William Wood & Co., 1920. Pp. 187.

DREAM PSYCHOLOGY. Psychoanalysis for Beginners. By Prof. Dr. Sigmund Freud. Authorized English Translation by M. D. Eder. With an Introduction by André Tridon, Author of *Psychoanalysis, Its History, Theory, and Practice, Psychoanalysis and Behavior,* and *Psychoanalysis, Sleep, and Dreams.* New York: The James A. McCann Company, 1920. Pp. xi-237.

ANNUAL REPORT OF THE SURGEON GENERAL, U. S. NAVY, Chief of the Bureau of Medicine and Surgery, to the Secretary of the Navy for the Fiscal Year 1920. Washington: Government Printing Office, 1920. Pp. 326.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINNESOTA. Edited by Mrs. M. H. Mellish. Volume XI, 1919. Published September, 1920. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 1331.

SLEEP WALKING AND MOON WALKING. A Medicoliterary Study. By Dr. J. Sadger, Vienna. Translated by Louise Brink. Nervous and Mental Disease Monograph Series No. 31. New York and Washington: Nervous and Mental Disease Publishing Company, 1920. Pp. x-140.

THE SOCIAL DISEASES. Tuberculosis, Syphilis, Alcoholism, Sterility. By Dr. J. Hericourt. Translated, and With a Final Chapter, by Bernard Miall. London: George Routledge & Sons, Ltd.; New York: E. P. Dutton & Co., 1920. Pp. viii-246.

PARACELSUS. His Personality and Influence as Physician, Chemist and Reformer. By John Maxson Stillman, Professor of Chemistry Emeritus, Stanford University. Chicago and London: The Open Court Publishing Company. 1920. Pp. viii-184.

ANESTHETICS. Their Uses and Administration. By Dudley Wilmot Buxton, M.D., B.S., Member of the Royal College of Physicians; Sometime President of the Society of Anæsthetists; Member of University College, etc. Sixth Edition. Philadelphia: P. Blakiston's Son & Company, 1920. Pp. xvi-548.

THE MAJOR SYMPTOMS OF HYSTERIA. Fifteen Lectures given in the Medical School of Harvard University. By Pierre Janet, Ph.D., M.D., Member of the Institute of France, Professor of Psychology in the College de France. Second Edition with New Matter. New York: The Macmillan Company, 1920. Pp. xxiii-345.

MEDICAL GYMNASTICS IN MEDICINE AND SURGERY. By E. Bellis Clayton, M. B., B. C. (Cantab.), Director of the Physiotherapeutic Department, and in Charge of the Massage and Electrical School, King's College Hospital, London. New York: Longmans, Green & Co.; London: Edward Arnold, 1920. Pp. viii-159.

A NATURALIST ON LAKE VICTORIA. With an Account of Sleeping Sickness and the Tse-Tse Fly. By G. D. Hale Carpenter, D. M., B. Ch. (Oxon.) Uganda Medical Service; Fellow of the Linnæn, Entomological, and Zoological Societies of London. With Two Colored Plates, a Map, Charts, and Eighty-seven Illustrations. New York: E. P. Dutton & Co., 1920. Pp. xxiv-333.

INTRODUCTION TO GENERAL CHEMISTRY. An Exposition of the Principles of Modern Chemistry. By H. Copaux, Professor of Mineral Chemistry at the School of Industrial Physics and Chemistry of the City of Paris. Translated by Henry Leffmann, A. M., M. D., Member of the American Chemical Society and of the (British) Society of Public Analyses. With Thirty Illustrations. Philadelphia: P. Blakiston's Son & Co., 1920. Pp. x-195.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School Volume III: The Eye, Ear, Nose, and Throat. Edited by Casey A. Wood, C. M., M. D., D. C. L.; Albert H. Andrews, M. D., and George E. Shambaugh, M. D. Series 1920. Chicago: The Year Book Publishers, 1920. Pp. 381.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume II: General Surgery. Edited by Albert J. Ochsner, M. D., F. R. M. S., LL. D., F. A. C. S., Major, M. R. C., U. S. Army; Surgeon in Chief, Augustana and St. Mary's of Nazareth Hospitals; Professor of Surgery in the Medical Department of the State University of Illinois. Series 1920. Chicago: The Year Book Publishers, 1920. Pp. 620.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Pernicious Anemia.—James G. Carr (*American Journal of the Medical Sciences,* November, 1920), in a study of 148 cases, finds that the clinical complex known as pernicious anemia presents certain characteristic blood findings, particularly the high color index, the presence of many large erythrocytes and of nucleated red cells, especially megaloblasts, and a tendency to a leucopenia, with a relative lymphocytosis; the clinical symptoms, though secondary in importance from the viewpoint of diagnosis, are yet distinct and definite. The progressive weakness, the gastric disturbances, the dyspnea, pallor, the cardiac findings and the edema of the feet, are the most typical and constant findings. Though pernicious anemia has its own characteristic diagnostic findings these may be simulated closely by anemias resulting from various diseases; in fact, the blood picture of pernicious anemia may be presented exactly as the result of some definite septic, toxic or malignant condition. The diagnosis should rest, not on the blood findings alone nor on the blood findings and symptomatology, but on these two features in the absence of any discoverable cause for the anemia. The disease is more common in males and is most frequent in the fourth and fifth decades of life. The cardiac symptoms and physical findings (the murmurs and the dilatation of the heart) are so constant as to be looked upon as among the most common symptoms of the disease. Anatomically, valvular disease is not a part of pernicious anemia; the cardiac findings are the result of myocardial weakness and relative insufficiency. Ascites and anasarca are not symptoms of pernicious anemia, and though there is a possibility that they may result from cardiac incompetency, this event is so unusual that their presence demands explanation.

The systolic blood pressure is almost never above normal, but tends to be below the lower limit of normal; the diastolic pressure is disproportionately low and the pulse pressure high. The urine is usually of a fairly low specific gravity, rather increased in quantity, and rarely contains albumin. The presence of albumin is not to be accepted as a usual finding in pernicious anemia; its presence with casts means nephritis, which may be the cause of the anemia rather than the effect. Pernicious anemia is characterized by an irregular temperature, which is not often above 101°; there are often recessions to normal of variable duration. Achylia gastrica is so much the rule that the presence of free hydrochloric acid may raise a doubt as to the diagnosis. The Wassermann reaction occurs infrequently in pernicious anemia. In forty-six cases there was a percentage incidence of 6.5; the general run of cases in a large charity hospital would probably show a higher percentage. It is possible that certain changes in the blood incident to the disease interfere with the reaction. The gradual decrease in the leucocyte count, especially in the relative and absolute number of polymorphonuclears, is of serious prognostic import. The diagnosis of pernicious anemia should be made with the utmost reserve in the presence of a leucocytosis.

The negative spinal fluid tests in the presence of well established cord disease point to a toxic degenerative process in the cord, rather than to an inflammatory process. Disease of the cord, with pernicious anemia, usually means an involvement of the lateral and posterior columns, a combined cord lesion. The presence of evidences of cord disease is of unfavorable prognostic import; the prognosis in these cases is grave, out of proportion to the blood findings as compared to the cases not so complicated. These patients are less likely to live long enough to develop advanced grades of anemia.

Transfusion of blood will not cure, but will often prolong the patient's life. The severe reactions which occurred in the series studied were probably the result of imperfect technic; the procedure has really been developed from its inception in the years covered by this study; transfusions are now being done with a much lower percentage of reaction. The transfusion of citrated blood is a simple procedure, but not a harmless one. Before the operation is undertaken the bloods of donor and patient must be demonstrated to be compatible by an acceptable and approved technic.

Adhesions of the Velum Palati to the Pharynx Following Tonsillectomy or Adenoidectomy.—J. Rouget (*Paris médical,* February 21, 1920), in experiments on cadavers of children, was unable, with Gottstein's curette, in spite of intentional roughness in its use, to produce simultaneously wounds on the pharyngeal wall and on the posterior surface of the velum palati, such as would be required for the formation of extensive adhesions between these two structures. In tonsillectomy, injury to one or both pillars on the same side is a possibility, but even if it should occur, in conjunction with some tearing of the pharyngeal mucous membrane, any resulting synechiæ could not be compared with the extensive fibrous adhesions of pharynx to soft palate occasionally met with after this operation. Sebileau has brought up the question whether inherited syphilis is not the true source of these cicatricial formations. If this were the case, the adhesions might be accounted for in two ways. A phagedenic ulceration of the operative wound might extend downward from the nasopharynx and the soft palate, and adhesion follow. Such a condition might easily escape observation, since many patients treated for adenoid growths in hospitals never come under observation again. Again, a gummatous process might, some months or years after the operation, cause partial destruction of the local tissues and broad cicatricial formations without attracting the attention of the child's parents. In two of the author's three patients, the Wassermann reaction was positive. The third gave a negative reaction, but this patient's brother had iridochoroiditis.

Etiological Classification of Heart Disease.—Charles M. Nice and J. G. Vance (*Medical Record,* October 9, 1920) think that there are five main groups. The first is that of acute infectious heart disease, later becoming chronic, where the chief offending microorganism is the streptococcus. The second group is that of syphilitic heart disease. The third is the renal arteriosclerotic type of heart disease, in which the associated kidney disease is predominant. In the fourth group of neurotoxic heart diseases are placed goitre, menopause, neurasthenia, tuberculosis, gout, and diabetes, with symptoms related to the hypotension type, to bradycardia and tachycardia and the arrhythmias. Group number five is that of congenital and anatomical heart disease.

Significance of Cardiac Murmurs.—C. J. McMullen (*Illinois Medical Journal,* December, 1920) summarizes his article by saying that there are five important conclusions which the army work confirmed: 1. Systolic murmurs, unless accompanied by definite cardiac hypertrophy, are of little practical importance, and we should avoid alarming the patient by telling him that he is suffering from serious heart disease. 2. Functional murmurs are very common. 3. Diastolic murmurs, practically speaking, are always organic. They are faint, often overlooked, and frequently not associated with the typical peripheral signs of aortic insufficiency. 4. The degree of cardiac enlargement is a very important factor in determining the significance of cardiac murmurs. The direct method of percussion is of great aid in mapping out cardiac dullness, and should be more generally used. 5. Extrasystoles often disappear after the removal of foci of infection.

Osteomyelitis.—Ochsner and Crile (*Surgery, Gynecology and Obstetrics,* September, 1920) give the following conclusions from their studies of the clinical considerations of osteomyelitis: 1. An early concise diagnosis and immediate surgical treatment are of the greatest importance. 2. The operation should invariably consist in splitting the periosteum for a distance of two to five centimetres beyond the area of pain upon pressure in the bone in each direction. 3. The periosteum should be loosened from the bone for a distance of one to two centimetres on each side of the incision. 4. In extremely severe cases this should be the extent of the primary operation. 5. In less severe cases ultimate healing can be hastened by carefully opening the medullary canal at the point previously located because of pain upon pressure. 6. Care should be employed to prevent traumatizing the tissues by rough chiselling. 7. Moist hot antiseptic dressings, with fixation of the extremity and the use of electric light treatment, increases the comfort and facilitates healing. 8. The shaft of a long bone should never be removed until a good involucrum is formed. 9. In late cases or in secondary operations in cases treated as above in the acute stage, every particle of dead tissue must be removed. 10. At this operation some definite plan must be carried out to facilitate closing the defect. 11. Skin grafting is of great value in many cases. 12. Local foci of infection, such as abscesses of tonsils or teeth or sinuses, should invariably be eliminated at once upon undertaking the treatment of patients suffering from osteomyelitis.

Cortical and Nerve Function Bladder Disturbances.—A. Adler (*Deutsche Zeitschrift für Nervenheilkunde,* March, 1920) says that neurologically there are four places in the cerebral cortex from which bladder activity can be affected. These are: A sensory centre of consciousness of strangury (Gyrus fornicatus) and a motor centre for voluntary evacuation of the urine (Lobulus paracentralis), a second motor centre for the cessation of micturition (Gyrus centralis anterior), and a station controlling all these centres of purposeful direction. From the physiological viewpoint the contradictory results of investigation on the function of the peripheral nerves of the bladder, rectum, and the uterus, are explained by the functional association in the peripheral ganglia cell complex. The ganglion mesenterium detrusor contracts, the plexus hypogastricus detrusor dilates, and the plexus vesicalis sphincter relaxes. The clinical findings show that functional bladder disturbances may be classified according to organically caused, localizable injuries of the brain.

Effect of Pregnancy on Cardiopathies.—Miguel Marti Pastor (*Policlinica of Valencia,* Vol. vii, No. 82), states that pregnancy augments the total volume of blood, and the advance of gestation causes pressure on the abdominal vessels and through the diaphragm on the thorax, both of which factors add to the work of the heart. There is consequently a hypertrophy of both normal and pathological hearts in pregnancy. Pregnancy is a serious complication in any organic heart affection. During actual labor in cardiac women it is better to avoid the extraordinary strain of the moment of expulsion by applying forceps or doing a version as soon as the slightest sign of cardiac distress is noted. When a pregnant women, with heart disease, shows symptoms of decompensation, labor should be induced as soon as possible by measures appropriate to the case and the period of gestation. Decompensation is a very serious prognostic factor in the pregnancy of the cardiac woman, and if compensation is not reestablished within forty-eight hours after delivery, death usually supervenes.

The Human Prehallux. — J. J. Monahan (*American Journal of the Medical Sciences,* November, 1920) says that the human prehallux is that supernumerary structure growing from the inner border of the scaphoid and directed downward and somewhat backward. It is far more common than is generally recognized, occurring in about one case of painful feet in ten. It is the real cause of many cases of foot trouble erroneously diagnosed as rheumatism, gout, flat foot and broken arches. It is directly homologous with the prehallux as seen in many of the lower animals and had its ancient origin, doubtless, in some ancestral form of the past that was common to all succeeding types. Its immediate origin may be considered the dormant ossification centres left in all feet by the atrophied fin rays. It is not a congenital structure in human feet but appears usually between the ages of twenty and forty in association with some constitutional disease, notably syphilis or tuberculosis. From the foregoing facts the human prehallux may well be looked upon as an evidence of foot degeneration.

Induced Typhoidal Abscesses.—Rathery and Bonnard (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 4, 1920) report two severe cases of typhoid fever in which, at the beginning of convalescence, there appeared typhoidal abscesses, in both instances at a point where trauma had previously been inflicted—in the one case an operative incision and in the other a fixation abscess. The interval between the trauma and the abscess formation was rather prolonged—twenty-one days in the first case and twenty-seven days in the second. In the latter case two fixation abscess injections were given, two days apart, and the two typhoid abscesses likewise appeared two days apart, in each instance twenty-seven days after the corresponding provocative injection. Apparently the abscess could not develop until the system had developed special powers of reaction against the typhoidal septicemia; hence the prolonged latent period between the provocative factors and the abscess formation in both of these grave typhoid cases.

European Children in Tropical Highlands.—Mr. MacKinnon (*Lancet,* November 6, 1920), in studying the effects of a tropical climate upon European children, presents his investigation of heart conditions in the same connection. His study is being carried out on two hundred school children at Narrobi in East Africa, about three degrees south of the equator, at an elevation of six thousand feet. The ages of the subjects, who had been born or had lived there for a period of from two to ten years, vary from seven to eighteen years, and the average normal pulse rate was calculated to be eighty-seven beats a minute. The pulse rate was taken immediately before and after the subject had run in a circle about fifty yards in diameter. The author finds that valvular disease is rare, only three cases showing organic derangement, although six per cent. show dilatation of the heart, and eleven dullness extending to the midclavicular line. The tendency is for these conditions to right themselves in time.

Experiments with Cerebrospinal Fluid.—J. E. R. McDonagh (*Lancet,* November 13, 1920), in a detailed article, reports the results of some experiments on cerebrospinal fluid from degenerative encephalitis, and thus summarizes his work: 1. Shaking the fluid with benzene, toluene, or xylol one day after withdrawal will show whether or not the meningeal lesions are degenerative. In the latter case a broad opaque band forms on standing. 2. There is no hard and fast line between the various proteins in the fluid (albumin, globulin, lipoidglobulin). Differences are physical. 3. The complement fixation test depends on the number of ions on the surface of the protein particles, their number and electric charge. 4. The gold sol test depends on the presence of lipoid globulin particles, which are positive. 5. The gold sol test made in distilled water will distinguish the normal from the degenerative fluid, as only the latter will precipitate gold. 6. The lipoid globulin particles in certain ways simulate parasites. Their presence in the degenerative fluid occurs by infiltration through the choroid plexuses. 7. The protein particles in a serum and a normal fluid may be made to closely resemble the serums and fluids of syphilis.

Proper Time for Operation on Congenital Cataract.—M. Hayward Post (*American Journal of Ophthalmology,* April, 1920) believes that the operation should be undertaken as early as practicable after the eyes have had the greater part of their growth, preferably about the eighth year, in order to lessen the possibility of retinal deterioration, to facilitate the operative procedure, to reduce to a minimum the danger due to anxiety neurosis, and to assist the child to grow up under as nearly normal conditions as possible.

Influence of Iodine on Hypertrophy of the Thyroid Gland.—Leo Loeb (*Journal of Medical Research,* May, 1920) carried out a series of experiments on the effect of inorganic iodine preparations on the production of compensatory hypertrophy in guineapigs. He concludes that iodine or its salts do not exert an inhibiting effect on the compensatory hypertrophy of the thyroid gland in the animals studied, but rather may increase the intensity of the hypertrophic changes. The effect of iodine on compensatory hypertrophy is therefore different from that on endemic goitre.

Vaccine Treatment for Pneumonia.—H. T. Gillet (*Lancet,* November 6, 1920) details a method for making an influenza vaccine, which he used in the epidemic of 1918. He prepared a culture from the streptococcus on the pharyngeal tissue of one of his patients, and sterilized it by incubation for twenty-four hours with five per cent. of phenol. Patients were inoculated in doses of two million. Of eight patients so treated, seven recovered completely, the fatal case showing the presence of Streptococcus aureus. The causal organism grows best on a blood culture.

Action of Benzol.—H. G. Weiskotten, C. B. F. Gibbs, E. O. Boggs, and E. R. Templeton (*Journal of Medical Research,* May, 1920) subjected rabbits to the action of vaporized benzol under conditions somewhat like those existing in industrial establishments. The rabbits showed marked leucopenia and slight anemia. The percentage and absolute decrease of small mononuclears were greater than that of polynuclear amphophiles. The occurrence of hemorrhages and tarry stools in the animals dying as a result of exposure represents the occurrence of a purpuric condition. The results obtained are of the same general nature as those produced by subcutaneous injection of olive oil benzol mixture.

Human Glanders.—F. H. Jacobs and others (*Lancet,* November 6, 1920) present their study (with photographs) of a fatal case of bacteriemia, which proved to be human glanders. The nature of the infection was established postmortem by comparison with histological sections of lesions from cases of proved human glanders. From the staining characters of the predominant bacillus it was identified as Bacillus mallei. The palate was ulcerated, and the lungs and spleen contained numerous foci of infection, in which the bacillus was mixed with a coccus. The clinical history indicates a subacute pyemia of thirteen months' duration, with multiple skin lesions appearing. Six months later deep ulceration of the fauces followed. The source of infection could not be found.

Proceedings of National and Local Societies

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 1, 1920.

Under the Auspices of the Section in Medicine, the Program Being Furnished by the Staff of the Peter Bent Brigham Hospital, Boston.

The President, Dr. GEORGE DAVID STEWART, in the Chair.

Acute Dilatation of the Heart During or Following Surgical Operations.—Dr. SAMUEL A. LEVINE, of Boston, read a paper on the occurrence, mechanism, and management of socalled acute dilatation of the heart during or following surgical operations, in which he deprecated the use of the expression "acute dilatation of the heart" for circulatory upsets occurring suddenly either in persons known to have had heart disease or in those who previously had not suffered from cardiac disorders. The exact nature of many of these upsets was obscure, and reliable evidence of actual dilatation of the heart wanting. During the past few years nine surgical cases who had some sort of circulatory upset or collapse during or following operations had been studied. Particular attention was paid to the mechanism of the heart beat and in each instance this was found to be abnormal. In three of the cases there were paroxysms of auricular tachycardia, four suddenly went into auricular fibrillation, and in the other two there was paroxysmal auricular flutter. The striking fact was that in every case there was a high grade of auricular disturbance, and in all but two the condition was transient. Graphic proof of the abnormal mechanism was obtained by electrocardiograms in six of the cases, and the clinical course of the other three left no doubt as to the nature of disturbance. While x rays of the heart were not obtained, röntgenographic studies of similar paroxysmal rapid heart action were made of other cases in the medical wards, which failed, except in isolated instances, to show any marked changes in the transverse diameter of the heart.

Three types of disturbances had been observed: auricular tachycardia, auricular flutter, and auricular fibrillation. A proper differential diagnosis of these three conditions was important because one type, paroxysmal auricular tachycardia, could generally be arrested by vagal stimulation, either by direct pressure over the carotid arteries or by ocular pressure. In the other two types this quick and dramatic method of controlling the disorder was impossible and could not be hoped for. In these they were dependent upon proper digitalis therapy. These heart upsets might occur at any time during the administration of an anesthetic, or while the patient was still unconscious after the completion of an operation. The three cases of auricular tachycardia occurred while the patients were still unconscious under anesthesia. In the other six cases the upsets followed operations at varying times, from twenty-four hours to nine days. The attacks lasted from several minutes to several days in seven cases, and in two the abnormal rhythm remained permanent during the entire time of observation. At times the clinical condition of the patient became alarming during the attack, while others were not much disturbed.

From a study of these nine cases it was impossible to predict what type of patient was likely to have a cardiac upset during or following operation. In none did syphilis seem to be an etiological factor. Ether was used as the anesthetic in seven cases, and novocaine as a local anesthetic in the other two.

Clinical examination of the heart showed that one patient had outspoken mitral stenosis, and five others had slight cardiac hypertrophy without disease of the valves. Eight of the patients were over forty-five years of age, and the other was a boy of seventeen who gave no evidence of any organic disease whatever, except a fractured clavicle, for which he was operated upon. In a word, there did not seem to be any constant etiological factor. In three patients of this series having paroxysmal auricular tachycardia, the attack was terminated by pressure over the left or right carotid or by ocular pressure.

Confusion would be likely to arise between auricular flutter with a regular ventricular rate and auricular tachycardia. The absolute arrhythmia of auricular fibrillation practically rules out any other condition. Vagal pressure never stopped an attack of flutter although the ventricular rate was slowed temporarily. On the other hand, the rate of auricular tachycardia was rarely affected unless the attack was completely arrested. It followed, therefore, that if an abnormal regular heart rate slowed temporarily during vagal stimulation, the mechanism was not due to auricular tachycardia but rather to flutter. In deciding whether a rapid regular rate was a normal acceleration or an abnormal tachycardia, it would be of considerable assistance to make an accurate determination of the apex rate, counting a full minute and repeating this observation in five or ten minutes. If it was an abnormal tachycardia, the rate might not vary even one beat, or at most not more than two beats, while in normal acceleration greater variations were found. Should the attack be one of auricular fibrillation or flutter, digitalis in some form was the one drug to be relied upon. It might not be necessary to use it if the clinical condition of the patient was satisfactory, for the attack might be transient. Although none of these patients received large single doses of digitalis by the Eggleston method, one would expect that such a procedure, or the intravenous use of strophanthine, might find a proper place under these circumstances.

Dr. THEODORE B. BARRINGER, in discussing the subject, said that he thought Dr. Levine had done a real service, particularly to the surgeon, in calling attention to this condition occurring in patients during or after anesthesia. There was a decided lack of knowledge of this subject, not only on the part of the surgeon but also on the part of the physician, so that Dr. Levine's paper was well worth while. He did not think these cases had always been termed acute dilatation of the heart. He had talked with a number of surgeons recently, and the only circulatory disturbances during operation which they recognized were syncope and surgical shock. Dr. Barringer said he had also talked with several anesthetists, thinking they would have had opportunities of seeing cases of this sort more frequently than the internists. Dr. Bennett had told him he had found that chloroform anesthesia not infrequently caused paroxysmal auricular tachycardia, and occasionally ether would do the same. He said that before patients went into syncope with chloroform anesthesia they were likely to have marked irregularity of the pulse, and also that he was never much disturbed by these auricular tachycardias because they generally stopped spontaneously. Furthermore, Dr. Bennett believed that it was well to digitalize patients giving a history of palpitation or dyspnea before operation.

Dr. Barringer said that the difficulty he had had in securing information about these purely cardiac conditions from the men who had most opportunity to see them was an excellent commentary on the service Dr. Levine had done in calling attention to this matter. An accurate diagnosis is always a prerequisite of intelligent treatment and prevention.

Glucose Tolerance Test in Chronic Vascular Hypertension.—Dr. James P. O'Hare, of Boston, reported the results of twenty-five glucose tolerance tests, done in twenty-three cases of chronic vascular hypertension, which threw an interesting light on the question of potential diabetes. The tests were arranged on a chart according to the size of the difference between the fasting blood sugar and the blood sugar two hours after the ingestion of glucose. The result was a widening band of difference which showed that these cases tended to merge into the typical diabetic reaction. The first seven cases showed fairly normal reactions, except that one showed glycosuria during the test. The next seven were only slightly abnormal, and the remaining eleven showed well marked abnormalities. The last two cases, one with a difference of 0.14 per cent. and a glycosuria of four per cent., the other with a difference of 0.22 per cent. and a glycosuria of two per cent., approached the typical diabetic reaction, if not actually diabetic. Little connection could be established between the blood pressure or the degree of arteriosclerosis and the variations in the reaction. It was well known that patients with chronic vascular hypertension were potential nephritis. The chart indicated that they are potential diabetics as well. Time alone would tell whether they would become true diabetics.

Dr. Warfield T. Longcope said that the problem of vascular hypertension was so important and so difficult to elucidate that such observations as those presented by Dr. O'Hare added valuable information to the subject and were of much importance. For some time observations had shown that a high blood pressure might be associated with diseased conditions other than those of the kidney. As an illustration, it was only necessary to mention certain instances of exopthalmic goitre, in which the systolic pressure might be high while the diastolic pressure was low. It had also been recognized that a large proportion of chronic diabetics showed various degrees of hypertension. In further studies of the group of cases which Dr. O'Hare presented, it would be important to determine whether the hypertension in most cases preceded the appearance of glycosuria or whether the glycosuria was of long standing and the hypertension appeared later. There is one possibility which had to be taken into consideration, namely, that these patients suffered from either a functional or an anatomical disease of the smaller bloodvessels. Early evidences of vascular disease were temporary or permanent hypertension, while the late effects were dependent upon secondary changes that took place in the heart, kidneys, and possibly the pancreas.

Epinephrine Hypersensitiveness in Hyperthyroidism.—Dr. J. T. Wearn, of Boston, said that the study presented came about as the result of an investigation carried out to ascertain the relationship of hyperthyroidism to the effort syndrome. During that study they had used the basal metabolism and at the same time the epinephrine tests. They had used the tests described by Goetsch. The patients were kept at rest in bed for several hours before observations on the blood pressure and respiration were made. The degree of tremor, sweating, dizziness, and palpitation were noted at the end of the rest period. Five c. c. of epinephrine were given subcutaneously or intramuscularly and observations were made on the blood pressure at five and ten minute intervals for an hour and a half. Observations were recorded and a positive reaction was interpreted as increase in pulse rate, tremor, sweating, palpitation. There were no reactions from the drug after forty-five minutes. The reaction usually occurred within half an hour. Several patients did not react. Goetsch had found a positive reaction in all cases of hyperthyroidism. There was a greater dilatation of the pupils in cases of diabetes than in hyperthyroidism. The severity of the reaction seemed to depend upon the severity of the hyperthyroidism. They had also taken twenty-six soldiers who had trained fourteen months and were in excellent condition, and not one of these reacted to the drug. They next took twenty-eight other persons, of whom four reacted. These men had been athletes and had increased systolic blood pressure. In all the experiments the respiration was dependent upon the rate of increase of the pulse and blood pressure. In seventeen cases of mitral stenosis, three gave a positive and two a doubtful reaction. Twenty-one cases of acute infection were tested. Of these, two following pneumonia reacted; three following diphtheria were positive and one was negative; of eight following acute rheumatic fever four were positive and four negative; three cases of sore throat reacted and three did not. Other conditions in which positive reactions occurred were syphilis, chorea, asthma, myxedema, acromegaly, diabetes, neurasthenia, and dementia præcox. In each of these cases the basal metabolism fell within normal limits.

In twenty-one cases of hyperthyroidism reactions to epinephrine were positive in fifteen and negative in six. All were clear cases of hyperthyroidism. Those in which the reaction was negative were all in the early stages of the disease. In nine cases tested with epinephrine after the removal of the gland, four still gave a positive reaction. Forty-eight per cent. of the cases with irritable heart responded to the test. In view of the fact that positive reactions to epinephrine were observed in conditions other than hyperthyroidism it was felt that extreme caution should be exercised in interpreting the findings.

Dr. Emil Goetsch, of Brooklyn, said he thought Dr. Wearn had brought out some interesting facts with regard to epinephrine hypersensitiveness in a number of instances other than in hyperthyroidism. He was afraid it had been assumed that he had said a positive response to epinephrine meant in all cases hyperthyroidism, but he had never held that this was the case. He did believe, however, that epinephrine hypersensitiveness meant a hypersensitive sympathetic nervous system, and that of all the diseases in which the sympathetic nervous system was peculiarly hypersensitive to epinephrine, hyperthyroidism was the one most frequently encountered. In a study of 450 cases of thyroid disease with reference to the epinephrine hypersensitiveness before and after operation, he had found that it was very important to be able to control the preoperative diagnosis by careful microscopical examination of the gland tissue removed at operation, in order to be certain, from the pathological point of view, that there was a histological change in the thyroid gland of a hyperactive character. Without the aid of the microscope one was frequently at a loss as to the final diagnosis. He believed now that hyperfunctioning thyroid tissue, whether of the usual hyperplastic character or of an adenomatous nature, could be recognized, not so much by the grosser features of hyperplasia and hypertrophy, but more precisely by the mitochondrial concentration in the cytoplasm of the gland cells. In this manner the diagnosis of hyperthyroidism could be placed upon an impersonal pathological basis.

Dr. Goetsch said that there seemed to be a tendency toward assuming that, if there was a normal or slightly increased basal metabolism in a particular patient it could therefore be concluded that this patient was not suffering from hyperthyroidism. He did not believe that this was true. Woodbury and Webb had found that in cases of adenoma of the thyroid, with a definite history of hyperthyroidism, the symptoms of the latter rapidly disappeared when these patients were put to rest in bed, and that at this time also the metabolic rate was normal. During the same socalled quiescent phase the epinephrine hypersensitiveness was still found to be present. In other words, this hypersensitiveness was found to persist even through the quiescent phase when the patient was at rest and when the basal metabolism was normal, and thus was a definite aid in recognizing this type of case.

Dr. Goetsch emphasized the importance of considering carefully the exact nature of the reaction before calling it positive or negative. The typical positive reaction was sustained and characterized by a fairly prompt response to the drug with a preliminary rise of blood pressure and pulse above 10 and with the exhibition of symptoms and signs; then a fall with diminution of symptoms followed by a secondary rise; and finally a fall of blood pressure and pulse and disappearance of symptoms with a return to a practically normal state in the course of an hour and a half. There was danger of calling a test positive when there was a short preliminary rise with a quick return to normal. This was sometimes seen in psychoneuroses and neurasthenia in which the sustained character of reaction was missing.

With reference to the metabolic rate as an index of hyperthyroidism it might be said that there were instances of increased metabolic rate in conditions not hyperthyroid, as there were also cases of true hyperthyroidism in which the metabolic rate was not increased.

It had been stated that a positive epinephrine test was obtained in the postinfectious cases, and it seemed to have been assumed that these were not cases of hyperthyroidism. Dr. Goetsch did not agree with this, for it seemed to be well founded that hyperthyroidism could result from acute infections.

It was difficult to determine for purposes of the test whether a person being tested for metabolic rate or epinephrine hypersensitiveness was normal or not, as individuals varied from day to day as to their thyroid state, which depended in large measure upon their psychic reactions to environment or other factors. In other words, it must be conceded that there were conditions of hyperthyroidism which were not possible of certain diagnosis after the ordinary clinical examination. In brief, the epinephrine test when positive meant that the individual had a sympathetic nervous system hypersensitive to the action of this drug, and that of all the diseases of which this was true, hyperthyroidism was the one condition which was by all odds most frequently found. On the other hand, negative reaction was of great value, for then one could positively exclude hyperthyroidism. The occasional case with a positive epinephrine reaction which was not hyperthyroidism could be excluded by a careful history and physical examination, and furthermore, by the failure of most of the ordinary medical and hygienic measures. The fact that a very definite improvement followed thyroid resection in individuals who had undergone every other form of treatment for long periods of time without relief, in whom no other pathological basis, such as tuberculosis, was found, but who gave a positive reaction to the epinephrine, remain to be explained.

Correlation of Basal Metabolism and Pulse Rate in Patients with Exophthalmic Goitre.—Cyrus C. Sturgis and Edna H. Tompkins, in presenting this study, said that while a study of the basal metabolism was probably the most accurate method that could be used in the diagnosis and in following the course of patients with exophthalmic goitre, its exact value was not known, and as it was a somewhat complicated procedure it was not available in many patients with the disease. Certain symptoms and signs of the disease, such as tachycardia, loss of weight, warmth of the skin, and sweating, were directly referable to the increased heat production and hence were indirectly a measure of the presence or absence of increased metabolism. Of these signs the simplest and easiest to determine was the pulse rate. Hence a series of patients with exophthalmic goitre and increased metabolism had been studied in order to ascertain the precise relation of the pulse rate to the increased heat production and to determine the value of the pulse rate as an indication of hyperthyroidism and a guide to the overactivity of the thyroid gland.

In a total of 104 individuals with a normal basal metabolism only five had a resting pulse over 90 a minute. A total of 496 basal metabolism determinations on ninety-nine patients with exophthalmic goitre from the Peter Bent Brigham Hospital and fifty-five patients as reported by Means and Aub have been studied. In 426 instances the basal metabolism was elevated plus fifteen per cent. or greater and the resting pulse rate was 90 a minute or more in eighty-four per cent. of these. In seventy instances when the basal metabolism had fallen below plus fifteen per cent. there was a simultaneous fall in the pulse rate below 90 in seventy-eight per cent. Probably the most accurate interrelation between the pulse rate and the amount of heat production was to be found during the course of the disease in any one patient. In a series of fifty-two patients with exophthalmic goitre, in whom two or more metabolism observations had been made, changes in the pulse gave an accurate idea of those in the heat production in eighty-five per cent of the cases. It is hardly to be expected that a given heart rate would always correspond to the same elevation of metabolism in different persons because of the variations of normal pulse rate in different individuals. In spite of this, however, when a considerable number of observations were considered, there was a suggestive interrelation between pulse rate and metabolism. There were, however, a good many discrepancies in which the metabolism was greatly elevated and the pulse rate relatively slow. Patients with auricular fibrillation could account for the slow pulse associated with the high metabolism in a number of cases. In other instances the slow pulse might be accounted for by the fact that when these patients had a normal metabolism their pulse rate was unusually slow.

Dr. Eugene F. Du Bois said that Dr. Sturgis had made an exceedingly careful analysis of his cases, and had drawn conservative conclusions. He had called attention to the fact that the pulse rate was one of the most important guides in hyperthyroidism, at a time when we were finding out that a good many of the socalled classical signs were not dependable. Dr. Sturgis was wise in emphasizing the fact that one might be misled by placing too much reliance on the level of the pulse rate alone in different individuals. The correlation between changes in pulse rate and basal metabolism in any one individual, however, seemed to be a valuable method of controlling treatment. There was probably a casual relationship between pulse rate and basal metabolism, because the increased demand on the oxygen consumption in hyperthyroidism was similar to the demand made by exercise. Since this increased oxidation was going on night and day, it was not surprising that the heart responded by increased rate.

Clinical Experience with a Dried Aqueous Extract of Digitalis.—Dr. Howard F. West, of Boston, said that a dried aqueous extract was prepared by promptly evaporating a freshly prepared infusion to dryness. This gave a fine brown powder which when kept perfectly dry had maintained its activity for a year. Each lot was assayed and mixed with equal parts of anhydrous sodium sulphate which aided in protecting the powder from moisture. The product was then made up to weight so that in potency it conformed to the pharmacopeial strength. It had been used in a considerable number of cases in the medical wards of the Peter Bent Brigham Hospital with uniformly satisfactory results.

By experience it has been found that thirty mgms. to the kilo of body weight, discounting edema, was the average physiological dose. When given rapidly, largely as single doses, to patients with auricular fibrillation, an initial effect, judged by the slowing of the heart rate, was noted in from three to six hours; a complete effect in from twelve to twenty-four hours. Marked diureses were frequently seen after large doses. When used in patients with regular rhythm who had obvious symptoms of heart failure, the effects were quite as satisfactory as in those with auricular fibrillation. After large single doses these patients showed rapid clinical improvement, and the vital capacity of the lungs showed prompt and striking increases, amounting to as much as fifteen to twenty per cent. in twenty-four hours. This test was advocated as a valuable procedure in studying cardiac patients.

Dr. B. S. Oppenheimer, of New York, recalled that Sir James Mackenzie had stated at the 1918 meeting of the American Medical Association that all the English preparations of digitalis which he had ever used had shown some activity. He thought this was also true for American preparations of digitalis. The modern clinician was no longer satisfied with this, however; he required of the pharmacologist a preparation which was standardized, remained potent, and was absorbed. Dr. West's dried aqueous extract had met these requirements. Professor Hatcher, of Cornell, had supplied Dr. Oppenheimer with a standardized tincture prepared from the chloroform soluble extract of digitalis, which was quickly absorbed and prolonged in its action. This had been administered according to the Eggleston method in divided doses at six hour intervals. The results with it had been very satisfactory. He had not as yet ventured to use this tincture intravenously. There was still a demand at the hospitals for preparations for intravenous use; over two hundred doses of digitalis were administered intravenously each month at Mt. Sinai Hospital. Personally he used ouabaine intravenously, but it was rather generally agreed that the indiscriminate use of strophanthine, without careful regard to dose and previous digitalization, would lead to fatalities. In closing, Dr. Oppenheimer wished to congratulate Dr. West on his use of the vital capacity as a measure of the patient's improvement under digitalis. Dr. West had demonstrated a marked improvement not only in patients with auricular fibrillation, but in those with a regular pulse.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

Vol. CXIII, No. 5. NEW YORK, SATURDAY, JANUARY 29, 1921. Whole No 2200.

Original Communications

THE MANAGEMENT OF BREECH PRESENTATION.*

By William Pfeiffer, M. D., F. A. C. S.,
Brooklyn, N. Y.,

Obstetrician in Chief, East New York and Brownsville Hospital;
Obstetrician and Gynecologist, Kings County Hospital;
Assistant Obstetrician and Gynecologist, Hospital
of the Holy Family.

Breech presentation carries an inherent mortality of ten per cent., made up from possibilities of prolapsed cord or other asphyxia from prolonged labor, difficulty with extended arms or aftercoming head. Anything, therefore, that can be done to correct this malpresentation and reduce the mortality to the less than one per cent. of the cephalic presentation is good obstetrics.

A study of the management of breech presentation which neglects the etiology is incomplete, for this will indicate whether the condition is susceptible of correction or is due to causes that are irremediable. Normal presentation is a matter of adaptation between the flexed fetal ovoid and the pyriform uterine cavity; anything causing a change in shape in either may produce malpresentation. The normal fetus at term in cephalic presentations, if enclosed in a straight sided figure, would present a triangle with its apex in the lower uterine segment. In general, there are six main causes of malpresentation, hydramnios, multiparity, prematurity, twins, monsters, and deformed pelves. Occasionally fibroids may be present. It will be noticed that, with the exception of deformed pelves, these interfere with adaptation by changing the shape of either the uterine cavity (hydramnios, multiparity—especially the rapidly succeeding pregnancies—twins and fibroids) or the shape of the fetal ovoid (prematurity, twins, monsters).

It has been said that he who manages his breech deliveries understandingly has learned considerable obstetrics. It takes experience to regard this abnormality with composure and to keep hands off until occasion for interference arises. We have all doubtless served our apprenticeship and have done well if we have passed the stage where the fingers twitched to grasp and extract the buttocks immediately they bulged the pelvic floor, forgetting that a large percentage of breech cases will deliver themselves to the umbilicus; a smaller percentage, yet not an inconsiderable one, will deliver the shoulders, and not infrequently the aftercoming head will be spontaneously delivered. Thus there is a normal mechanism for this presentation, and our attitude should be one of prepared expectancy.

Before labor, or early in labor if the membranes are unruptured, external version should be attempted, anesthesia being used if necessary to obtain a sufficient degree of relaxation, and this succeeds oftener than the textbooks lead one to believe. The patient is in slight Trendelenburg position, extreme gentleness of manipulation is used to prevent uterine contractions, while a diverting conversation is carried on to forestall action of the abdominal muscles. The version is done in the direction that will maintain fetal flexion, thus keeping the bulk at a minimum and also preventing extended arms or legs setting up uterine contractions by striking the walls. Lateral pads and an abdominal binder may be needed to maintain the new presentation.

The membranes usually rupture at the onset of labor because the irregular breech does not fill the lower uterine segment as well as the globular head. Thus the first stage is prolonged because we lack the firm equal pressure of the hydrostatic dilator, having in its place the soft, compressible breech. The breech is also late in entering the brim, and this is particularly so in the frank variety where the extended thighs splint the trunk, making it less flexible. That the breech is a poor dilator is well illustrated by the ease with which the buttocks may be drawn through the incompletely dilated os. The traction continued now the arms extend as they meet the resistance of the cervical ring, making their delivery more than usually difficult, and even with this accomplished, the still incompletely dilated os defeats all attempts to extract the head, and the child perishes in our hands. We have all probably had this experience. The uncomplicated breech should be left alone until definite indication for interference arises on the part of either the mother or the child. It is well to keep the patient abed to preserve the membranes if intact and to prevent prolapsed cord if ruptured. This is not to be a period of idleness for the attendant, for watchful waiting includes having a competent assistant within call, sterilization of instruments, including forceps, preparation of the patient and materials for an operative delivery, and having ready aids for resuscitation. The bladder and rectum must be emptied. When dilatation is complete active preparations are to be

---

*Read at a meeting of the Brooklyn Medical Society, February, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

made, for the second stage is usually shorter than in an ordinary labor. As the buttocks strike the floor, the soft parts are to be widely dilated, either manually or by a central episiotomy. This is important at this time, for the delivery of extended arms or aftercoming head may have to be hastened and the early dilatation may save a considerable tear as the trunk, plus the hand, stretches the floor. Neglect of this is responsible for numerous third degree tears.

From this on the patient had better be placed upon a table with her legs held in the lithotomy position. At home, if a firm table is not available, the patient should be put across the bed with the buttocks close to the edge and a table leaf or an ironing board put under the mattress to give a plane surface to work upon. Anesthesia here depends upon how well the patient can be controlled without it. Its absence secures the aid of the patient in expulsion, but if she cannot maintain her posture, then ether, to the obstetrical degree only, is valuable. The obstetrician now needs more to control himself than the patient. This is where traction makes extended arms and heads. If the efforts of the patient do not advance the breech, the assistant begins compression on the fundus, under the direction of the attendant, and very few nurses, unless specially trained, can do this satisfactorily. With the buttocks delivered, it is wise to cover them with a warm towel, though this may be discarded if in the way later on. From the time the umbilicus appears, the delivery must be completed in a period varying from the classical eight minutes of the textbooks to the more leisurely twenty of a recent accoucheur. Few of us are willing to subscribe to the latter and feel safer if, without sacrificing skill for speed, the classical time is not exceeded, for we know that from the time the head enters the pelvis and pinches the cord between it and the brim, the circulation to the infant is cut off; no child can survive this for longer than fifteen minutes. Usually, however, with the normal case now being considered, there is no need for speed unless pulsations in the cord are feeble or absent.

The next step is to locate the arms. Are they flexed? If so, they may be left alone or gently drawn down, with the hand of the attendant passed along the abdomen. Occasionally, in spite of the efforts of the assistant to keep the head flexed and accomplish delivery by expression rather than by traction, the arms will be extended. Then the following procedure will be found satisfactory and has been demonstrated to succeed equally well upon the patient as upon the manikin.

The child is seized by the heels, knees or pelvis and the body drawn down in the axis of the inlet until the posterior shoulder is within reach and the bisacromial diameter parallel to the anteroposterior of the outlet. The body is then sharply flexed until the abdomen of the infant lies in contact with that of the mother. This brings the posterior shoulder considerably lower, and the delivery of the arm is usually easily accomplished by passing two fingers up the dorsum, over the scapula, down the humerus into the elbow, and then sweeping the arm across the face, down over the chest and abdomen. If attempts be made to deliver the anterior first or without rotation posteriorly, the pubic rami will interfere and make delivery difficult, unless the baby is very small. The rotation of the body to make the delivered arm anterior and the undelivered anterior arm posterior, is accomplished by placing one's thumb on the scapula of the delivered arm with the other fingers on the anterior chest wall, and the trunk swung 180 degrees anteriorly toward the side that the child's abdomen faces; at the same time the other hand grasping the ankles, swings the legs in the same direction. It will be found easier for the operator to use the hand corresponding to the arm which has been already delivered. This does not twist the neck, as might be supposed, for, as demonstrated on the manikin and worked out on the patient, the head rotates with the shoulders. (The assistant takes no part in this step.) The arm which was anterior and close to the pubic arch is now posterior; the child's body is again sharply flexed belly to belly, but to the opposite side from formerly and the arm delivered as was the other.

The attendant now ascertains the location of the head, whether extended or flexed. If it is flexed and in the pelvis, the finger is passed to the mouth to maintain flexion as the assistant makes firm pressure in order to express the head. Unless faulty traction has been made, the head will rotate so that the occiput is anterior, and as the abdominal pressure is continued, the attendant raises the body so as to allow the head to be born by flexion. If the head is found unengaged, the attendant rotates the head into an oblique diameter of the pelvis, the finger is passed into the mouth to flex the head and the external hand makes firm pressure above. This is all much more the work of the assistant than the attendant, and has been concisely put: "Delivery of breech is more push than pull."

In breech extraction there must first be complete dilatation of the external os and plenty of room at the pelvic outlet, as stated above. While it may be necessary occasionally to break up the breech and draw down a leg that the buttocks serve as a tampon in placenta prævia, or to prepare for a rapid delivery in cardiac or pulmonary complications, it should be done infrequently as the whole breech is a better dilator than the half breech.

If the powers fail above the brim and the prerequisites of wide open cervix and floor have been complied with, traction in the axis of the brim with the finger in the groin is usually successful if aided by expression. If it fails, a foot brought down by Pinard's maneuvre will give something with which to make traction. Where possible, the anterior leg should be selected to prevent its overriding the symphysis, as may happen if the posterior one is first brought down.

The fillet is not easy to apply and if the hand can be passed up high enough to put it on, traction in the groin could have been accomplished without the danger of fracture, which sometimes results from the slipping of the fillet; the finger will usually tire before it causes a fracture.

Forceps to the breech are dangerous; they will slip and fail oftener than succeed. Forceps to the aftercoming head are almost never necessary, but should be ready in case delivery cannot be made otherwise. Nuchal arm is fortunately rare, but as the finger board has long served as a guide post, we may solve this difficulty by rotating the body in the direction in which the hand points.

Is Cæsarean section ever justified in breech presentation? If the child is estimated to be large or at the pelvis borderline, particularly at the brim, this type of delivery may be considered. Even then it is more the pelvis than the breech that selects the operation.

CONCLUSIONS.

1. Breech may be corrected oftener than commonly supposed and external version should be attempted, unless the etiology makes this impossible.
2. There is a definite mechanism for buttocks, shoulders and head with spontaneous delivery often occurring. Hence, until positive indications arise in either the mother or the child, interference is not only meddlesome, but dangerous, as it may make a difficult case of a simple one, seriously endangering the life of the child.
3. Of importance in the management of spontaneous delivery of breech are a fully dilated os and a well stretched floor. In breech extractions this importance is strongly accentuated.
4. A proper assistant in all cases is urged, as expression is better than traction.
5. Cæsarean section occasionally may be necessary, but this is because of associated anomalies rather than the breech presentation.

368 McDonough Strret.

TREATMENT OF ADDICTION DISEASE.

By Frank Burns, M. D.,

Cincinnati, Ohio,

Federal Physician for Southern District of Ohio.

As Federal physician for the southern district of Ohio, I have devoted a great deal of time to the medical handling of drug addiction disease patients, arrested in the southern district of Ohio by narcotic officials. This work has been done by me since holding the present position, carried on in my general medical supervision, without special isolation and without a special nursing staff. I have had facilities for desirable and exhaustive investigation and findings in these cases. The large proportion of drug users among the inmates of this institution makes the work of vital importance. The passage of antinarcotic legislation has still further increased the drug using population, and added to the administrative work in dealing with the problem.

It is difficult for most of those who have not had competent experience with this disease and who have not made careful clinical study of it to appreciate that a procedure which will completely relieve one patient will not have the same result with another, and the patient is not necessarily well when he has been through treatment, but is only fit to be pronounced well when the physical manifestations of his disease have disappeared and when he is in functional readjustment and normal balance. It is to be noted that in the cases I am called upon to treat the patients for the most part are inherently defective and fundamentally below par in mental, moral and psychical make up. I have probably a larger proportion of this class in my cases than exists among those treated in general hospitals and private institutions. It is, therefore, foolish, misleading and dangerous to speculate upon the percentage of cures among such cases.

I believe from observation among the better class of addicts that the great majority would gladly abandon their habit and be free from the agonies attending such addiction if it were made widely possible for them by treatment which did not force them to the endurance of great suffering and was not followed by a protracted period of discomfort and physical incapacity. But I do not plan to make this report in any way an exposition of medical quibble nor to burden it with medical details. Narcotic drug addiction is a physical condition in which continued administration of narcotic alkaloid, from whatever cause or origin and in whatever type or class or individual, has set up within the body a mechanism of protection against the toxic action of narcotic drugs.

The addiction disease problem is now fast coming to be recognized as fundamentally a disease problem for whose basic solution we must look to clinical and experimental medical laboratories for our guide. It has associated with it many problems not of medicine, problems which are in part incidental and in part intrinsic, and which call for in such cases as they complicate the medical picture, custodial, correctional, penal or other handling. Laws and their enforcement in the control of the incorrigible and vicious will always be a necessity, but laws and their administration alone are not sufficient for the control of the many sided addiction situation. A large number of citizens who are individually and personally social and economic assets and who are sufferers from addiction disease should be an important consideration in the narcotic problem. Ignorance of the facts of addiction disease has taken from these people even their ordinary legal public rights in any issue which involved the possible revelation which might reveal their narcotic medication, and would expose them to public gaze as members of a popularly despised and unworthy class of individuals.

Some addicts, as individuals and types, will of course always require institutional and custodial handling. The handling of the addict who is criminal or vicious belongs within the province of the penological authorities, just as does the handling of any other man who is criminal or vicious. The handling of the addict who is fundamentally degenerate, defective or mentally weak would require the attention of the alienist and institutional restraint, just as may the handling of any other man who is degenerate or defective. But narcotic drug addiction disease in the man who is vicious or criminal or defective or degenerate should be treated as narcotic drug addiction disease, as any other disease is treated in the same individual.

The one important point to be kept in mind is that narcotic addicts are sick; sick of a definite and now demonstrable disease, as outlined by the work and research of Horovitz, Bishop and others. This disease is variously complicated and widely variable as it occurs in the individual patient. Although some individuals afflicted with this disease may require custodial or correctional handling, the fundamental physical disease cannot be properly arrested nor handled successfully by mental, moral, sociological or penological methods only. Any toxic, worried, fear ridden or suffering sick person may show psychiatrical manifestations or complications, but observing and attempting to control complications only will not cure basic disease. There are many patients, as previously stated, in whom addiction disease is in no way associated with vice, or other morbidity of mental or environmental origin, who are merely sick people suffering from addiction disease, whose problem is control of that disease until it can be arrested by competent therapeutic procedure, for which they constantly seek.

Our stumbling block in the past has been that our minds have been focused too much upon the mere use of narcotics and upon the stopping of the use of the drug and too little upon the individual we were treating and the mechanism of his disease. We have tended to apply our remedial effort to narcotic use instead of narcotic drug addiction disease. There has been of late, however, signs of change in the situation, and in this change lies one of the greatest hopes of the solution of the narcotic drug problem. The attitude toward addiction is beginning to follow the trend of modern medicine in getting away from special routine treatment, and the search for specifics and panaceas, and aiming at, and devoting great effort to searching out, considering and treating the fundamental cause underlying the condition, as has been done through the research of Horovitz, whose preparation I have tested in my work on addiction disease. Horovitz's lipoidal substances and their action are familiar to most men treating this disease. The action of alkaloids upon various tissues and their constituents brought out the conclusion that various alkaloids have a different influence upon various tissues and their components, and all have a dissolving action upon the lipoidal contents of the various tissues, that the vitamine contents of the tissues have the duty to protect their environment against the destructive action of toxins of low nitrogenous content. The lipoids of certain tissues have a similar activity toward toxins of similar nitrogenous content, like the toxins released during the use of narcotics. During the period of taking opiates the lipoidal content of the tissues of the nervous system is greatly reduced, causing changes of such a nature as to produce a desire for narcotics. Horovitz, realizing that addiction is caused by the absence of lipoids in the system, endeavored to find means by which it is possible to replace the lost lipoids of the system of patients suffering from drug addiction disease. Furthermore, he realized that in this type of cases the system is saturated with various forms of toxins, and the neutralization and elimination of these toxins was of imperative importance.

CASES OF ADDICTION DISEASE TREATED WITH LIPOIDAL SUBSTANCE.

Cases taken promiscuously—not selected.

No.	Name	*Age in years*	*Duration of disease, years*	*Grains of opiate used daily*	*Number of days of treatment*	*Final results*	*Remarks*
1	G. H.	28	5	25	45	Improved	Had received five other treatments prior to present.
3	M. B.	25	4	10	20	Greatly improved	Gained rapidly in weight.
7	H. R.	26	10	35	40	Greatly improved	Patient had tried all other treatments and pronounced this one the best.
11	S. C.	45	15	10	30	Improved	Patient recommended the treatment.
12	B. C.	38	3	5	25	Improved	
17	T. McG.	23	3	15	22	Improved	Resumed his position as vaudeville performer.
21	W. P.	21	2	5	9	Fair	Expiration of sentence before treatment finished.
23	F. B.	26	7	30	45	Excellent	Gained forty pounds in forty-five days.
27	P. G.	26	6	10	30	Fair	Did not improve in weight.
28	S. G.	24	5	10	30	Improved	
30	H. A.	25	5	10	12	Unimproved	Left before treatment was finished.
35	W. F.	45	12	20	20	Slightly improved	
42	D. G.	29	11	30	30	Unimproved	Did not want to abate the habit.
45	G. R.	44	20	25	10 & 20	Unimproved	First treatment ten days. Out on bond to take other treatment in sanatorium. Came back again, saying he preferred this treatment.
47	O. De A.	50	18	40-50	5	No results	States he would take ten years and not quit his habit. Refused further treatment.
50	J. H.	27	6	10	22	Improved	Says he is a man now and intends to stay a man.
55	R. C. (alias Frisco)	43	13	20	24	Excellent	Asked for treatment as prophylactic.
57	Wm. B.	25	12	30	22	Improved	
60	J. B.	24	5	5	20	Fair	
61	O. N.	26	10	20	30	Improved	
87	C. C. F.	41	5	15	14		Still under treatment
88	W. Sch.	29	9	12	14		Still under treatment
89	F. G. (M.D.)	36	18	30	14		Still under treatment
90	C. A. W.	21	3	2	3		Still under treatment
91	C. P.	29	8	15	4		Still under treatment
92	J. K.	28	7	25	3		Still under treatment
93	J. F. K.	34	9	14	14		Still under treatment

NOTE.—In each case one c.c. of the lipodial substance was given daily.

My series of cases include both male and female patients of this type, of these eighty-four were male and nine female, a total of ninety-three. The duration of the disease is noted in the accompanying chart of the cases, and likewise the daily amount of drug used. We did not have the opportunity of rating these cases as to endocrine changes nor the heart, pulse and other reactions, but only on the clinical manifestations.

Most all of these patients improved in appetite and general physical condition, gained in weight, and did not complain of usual manifestations after fourth or fifth day. As to whether or not they would return to their habits upon return to their former environment would be hard for me to state, as this depends upon moral environment and association. A statement was made by some that they would like to verify their cure, but were warned not to attempt such a hazard.

CONCLUSIONS.

1. Lipoidal substances gradually reduce the craving.
2. During the treatment with lipoidal substance the patient does not suffer the tortures experienced during the reduction treatment.
3. All the bysymptoms of drug addiction disease (respiration, heart action, constipation) are rendered normal during the treatment with lipoidal substance.
4. In patients once clinically recovered under the influence of lipoidal substance there develops a well defined contempt toward alkaloids.
5. Patients with pathological changes not due to the influence of alkaloids will go back to the use of narcotics.
6. Patients who suffer solely from the ill effects of alkaloids will remain normal, once the treatment comes to a successful conclusion.
7. Lipoidal substance is administered hypodermically with no ill effects whatever.

2257 Vine Street.

THE ROLE OF THE OCULAR MUSCLES.*

From an Economic and Social Viewpoint.

By Edwin B. Miller, M. D.,
Philadelphia,

Assistant Professor of Ophthalmology, Graduate School University of Pennsylvania, Associate in Ophthalmology, Temple University; Ophthalmologist, Roosevelt Hospital.

From the economic viewpoint, the individual with a badly squinting eye is handicapped, and must accept an inferior position in the industrial world. This is becoming more evident every day, because of the weeding out process that is carried on by the medical departments of the large industries, and many good and efficient workmen are prevented from advancing or securing positions in their chosen line of endeavor.

Persons suffering from latent squint or phoria, who might pass the medical inspectors and secure a position, are badly handicapped in their work because of eyestrain, and reflex nervous phenomena which are associated with this condition. This is particularly true of occupations and professions that require the constant use of the eyes for near work. These individuals fail in their work and are often compelled to drop out because of socalled nervous breakdown.

From a social viewpoint, the man or woman with crossed eyes, or other manifest muscle defects, is unable to reach his or her proper social status, while those with latent squint or phoria are often so handicapped by an irritable temper, headache, and other reflex nervous symptoms, that they are unable to maintain their proper relations to their immediate family, and particularly toward individuals with whom they are associated outside of the home. Small children who have suffered from the gibes of their playmates in school become extremely sensitive and are particularly anxious to have the defect corrected.

It is becoming more evident to ophthalmologists that they have not been as careful and as painstaking as they should have been in their study of these cases, and we have positive evidence that these conditions, especially the phorias or latent squints, are largely overlooked by nearly all of the rest of the profession. We are constantly meeting obscure nervous cases that are not benefited until the ocular muscle balance is carefully studied and the defect corrected.

That parents, educators and the general public know almost nothing of these conditions is self-evident to the most casual observer, and that an educational campaign should be conducted by the various organizations now in existence for the conservation of vision, is impressed on the mind of everyone interested in this subject. Most of the work of these commissions has been along the line of the cause, prevention, and cure of acute infectious diseases that result in blindness, and the muscle phase of the subject, important as it is, has been overlooked.

Correct muscle balance means cooperation and teamwork between the muscles making up the group of extraocular movements. Anything which interferes with this causes muscle imbalance with its attendant distressing symptoms.

Some years ago when horse cars were still on our streets it may be remembered that in snowy weather the company sent out sweepers, drawn by six or more pairs of horses. The driver of these horses was always a sort of hero in the eye of the small boy, and even we older ones admired the skill with which he managed his team. We can readily liken the harnessing up of the ocular muscles to a team of six pairs of horses.

For the purpose of clarifying the situation and making plain our study, we might briefly say a word about the way these muscles are linked up anatomically, and how they act physiologically.

There are twelve ocular muscles, six for each eye: two superior recti whose primary function is to pull the eye up; two inferior recti whose primary function is to pull the eye down; two external recti whose primary function is to pull the eye out; two internal recti whose primary function is to pull the eye in; two superior oblique or wheel muscles whose primary function is to rotate the upper vertical axis of the eye in; two inferior oblique or wheel muscles whose primary function is to rotate the upper vertical axis of the eye out.

But this is not all; let us go back to the team of horses. If there was a direct pull on the lines from where the driver sits to the horses' heads, it would, when applied, simply raise their heads, and if continued lift their forefeet in the air, setting them upon their haunches. The lines and harness are so arranged that when the lines on the right are pulled on, the heads of the horses turn to the right, and if the left lines are pulled on the horses' heads are directed to the left. The action of the ocular muscles is somewhat like this.

You will remember that all of the muscles, except the inferior oblique, whose origin is on the nasal side of the orbit, have their origin around the optic foramen, and that they are all attached to the eyeball in positions which give them the proper pull. They are arranged in pairs. They are in a state of tonic contraction. One set opposes the opposite set, so that when one set contracts the other relaxes. Thus, if we look to the right, the right external rectus and the left internal rectus contract, and the right internal rectus and the left external rectus relax. If we look to the left, just the opposite takes place. If we look up, the superior recti and the inferior obliques contract, while the inferior recti and the superior obliques relax. In looking down just the opposite takes place. When we converge, the internal recti contract and the external recti relax.

---

*Read before the Samaritan Hospital Medical Society, November 8, 1920.

These are all primary movements. There are some complicated secondary movements; for example: When the internal recti pull the eyes in, both sets of superior and inferior recti muscles assist after the eyeball passes a given point on its rotation inward. Thus six muscles are acting in unison to produce one motion. There are five known conjugate centres in the brain which control these movements. One centre for the elevators, one for the depressors, one for the movement to the right, one for the movement to the left, and one for convergence. All muscles under the control of a conjugate centre act at the same time and with the same intensity, thus keeping the eyes parallel in any excursion except, of course, in the act of convergence just mentioned, which is associated with accommodation.

If for any reason a muscle should lag slightly, we have a phoria or latent squint; if it should practically cease to act we have one of the various tropias or manifest squints.

This every medical man should know. He should also know something of the fusion faculty which is the sense that enables us to secure binocular vision. It is fully developed by the sixth or seventh year, and cannot be acquired after that time. If it is weak or absent, the various symptoms coming under the head of muscle imbalance are produced.

When we look at an object, each eye would see it separately, if it were not for the fusion faculty which causes the images to be superimposed one on the other, thus giving to the object the sense of depth. If because of a faulty fusion faculty or defect in muscular movement this overlapping is interfered with, we have diplopia or double vision. This can be readily demonstrated by placing a ten centrad prism over one eye base up or down, thus separating the image looked at, one for each eye.

Diplopia can be gradually overcome by the patient suppressing the image in the brain for one eye; this eye suffers loss of vision, becomes amblyopic and, since it cannot fix on an object, wanders from parallelism, and the various types of squint with which we are familiar are thus produced.

How can we combat these conditions and improve industrially and socially the condition of those suffering from these defects?

First, by conducting an educational campaign through the county societies, and by obtaining the cooperation of the family physician in searching out and studying their cases. Second, by getting the active cooperation of the organized corps of school inspectors to make careful examinations of all cases, using the simple cover test and also the displacement and distortion tests, which are simple and can be carried out in a few minutes. Third, by lectures and lantern slide demonstrations in school houses and community centres to which the parents can be invited.

After the defect is discovered it can be corrected: first, by proper refraction by an oculist; second, by muscle exercise conducted by an oculist; third, by various operative procedures if exercise and refraction fail to bring about a cure.

The question is raised as to how early a child with a manifest squint should wear glasses. From the age of eighteen months on. His eyes should be tested every year until the correct refraction is obtained and ocular balance maintained. If this fails to keep the eyes parallel, operation might be performed, I should say, after the fourth year, depending on the case.

One may ask whether it is worth while for a medical man to have an idea of the general types of squint, operations, and what they are expected to accomplish. I think it is, for it is only by this knowledge that he can intelligently direct his patient.

There are three methods of operation. The first, tenotomy, or cutting of the tendon of the contracted muscle, allowing the eye to assume its central or parallel position. It can be done by the open method or the subconjunctival, and may be partial or complete. It is performed under local anesthesia, except in small children or very nervous adults, when general anesthesia is most effective. It is useful in slight degrees of squint, I should say, under fifteen degrees. It is an operation that has been discarded by the conservative operator, except where it is used in connection with and as an adjunct to an advancement or tucking.

The second method is known as advancement. Here the muscle tendon is separated from its attachment and moved farther forward, or a section is cut from the tendon; the remaining cut ends of the severed muscle are brought together, or the muscle, capsule of Tenon, and the conjunctiva are stitched together and advanced to a new insertion on the globe.

The fact that at least a dozen methods of advancement have been presented by different operators, shows us that the results are not always what they should be. This operation must often be accompanied by tenotomy of the opposing muscle. It is applicable to squint of high degree.

The third method—and I place it last because it is the newest—is the tucking operation. The muscle is loosened from its fibrous attachment except at the origin and insertion, and by a special instrument, called a tucker, is folded and stitched down to the globe. This is applicable to squint up to twenty-five degrees, although many operators use it exclusively and with good results. It is frequently necessary to do a tenotomy on the opposing muscle. Some operators use ether anesthesia exclusively, but in adults it can easily be performed under cocaine, and this is the method I prefer.

Operations of this character require rare judgment and discrimination, both in selecting the type of operation suitable to the case, and in knowing just how much to do. If you overdo it, you are likely to have deviation in the opposite direction. If you do not fully correct the error, you will have a partial return of the original deviation. Knowing this, it is good practice to bring the eyes into parallel or slightly beyond, to allow for slipping. If there is a tendency toward a slight return to the original deviation, the glasses that the patient must necessarily wear will maintain the eyes in a position of parallelism.

It is frequently necessary to do several operations to bring about this result, and this should be explained to the patient. But the result justified the measures taken. The operation of choice in my experience is the musculocapsular advancement after the method of Worth.

CONCLUSIONS.

1. The study of muscle imbalance and the search for these cases is the duty not only of the specialist, but also of the general practitioner.
2. The correction of these errors is a boon to many suffering patients, and opens up a new world to them, from both economic and social viewpoints.
3. The recognition of these conditions, and the knowledge that they can be greatly improved or entirely cured by suitable measures, should be disseminated throughout the community.
4. The utmost frankness and cooperation should exist between the employer of labor, the teacher, the physician, and the parents of the child.

2040 Chestnut Street.

FUMIGATION INHALATION TREATMENT OF SYPHILIS.

With a Report of Several Cases.

By Joseph P. Burns, M. D.,
Philadelphia,

Formerly Major Medical Corps, U. S. Army, General Hospital No. 5, Fort Ontario, N. Y.

This report has been prepared in response to many requests, from state officials and others, for information concerning the preparation known as spirocide used at General Hospital No. 5, Fort Ontario, Oswego, N. Y., in the treatment of syphilis by the fumigation inhalation method, in the genitourinary wards, under Colonel Henry D. Thomason, commandant, and Major N. Bodenheimer, during my term of four months as ward surgeon in the genitourinary wards.

At present when the whole country is aroused to the need of suppressing social vice, any suggestion, any method, that will control or limit the ravages of venereal disease, or anything that will aid us in the present mode of treatment thereof, should be welcomed by all interested, and any knowledge, therefore, that will benefit suffering humanity should be of especial concern to the medical profession. I think we should accept as part of our armamentarium any treatment that will ameliorate or cure syphilis and kindred diseases.

Of all the ills to which our flesh is heir syphilis with its innumerable associated ailments in the three stages of the disease is the most dreaded disease of man; it attacks every part of the body; it often is baffling to the diagnostician. The disease requires skilful treatment, and if this is lacking its manifestations recur until death.

The number of cases treated by the fumigation inhalation method is large. Ever since the surgeon general designated General Hospital No. 5, Fort Ontario, N. Y., to be a hospital for venereal diseases the fumigation inhalation treatment has been given. The results have been most gratifying.

All men inducted into the army at Fort Ontario were required to have a Wassermann blood test made. This procedure will undoubtedly save the Government considerable money; for it is almost certain that many unscrupulous discharged men will endeavor to claim compensation to which they have no right, because they bore the penalty of their own disability through immorality, which existed prior to their enlistment, or conscription. This is why the Wassermann test is recorded in all syphilitic histories, consequently it will be rather difficult to impose unjust claims upon the Government.

"Of all the ills which the soldier suffers, those consequent upon venery affect his efficiency to the greatest extent, and constitute the most important health problem in the army. Our army is made up mainly of young unmarried men, freed from the moral restraint of home ties, often without opportunity for association with decent women, and susceptible to the suggestions of the vicious. Frequently they visit places of amusement, many of which are maintained with the sole object of pandering to vice, and the advances of lewd women which combine to break down any moral defence they may possess." It is a medical axiom that every prostitute becomes infected with syphilis within two or three years. It is therefore easy to see that the risk of contagion is great.

The war department requires that enlisted men who have exposed themselves to venereal infection shall report at hospitals and dispensaries for cleansing and preventive treatment immediately upon return to camp. The physical inspection is made twice a month in the endeavor to keep them physically fit. Our venereal patients numbered about eight hundred or more. Few cases of venereal trouble were found among the personnel at Fort Ontario, due to the fact that proper prophylaxis was carried out by the men after exposure. The ratio of venereal diseases when we entered the war was about one hundred and sixty to the thousand.

The cases in General Hospital No. 5 under treatment were mostly conscripts from Recruit Camp, Syracuse, N. Y., that is, these conscripts were found to be afflicted with venereal diseases before being fully inducted into the army. Nearly all the men who left the hospital as soon as open lesions had been cured and their Wassermann test had become negative would be assigned to encampments in various parts of the country.

The purpose of the Government is to protect its citizens as well as its army personnel, and a Government that will fail in this respect would be found sadly wanting in national usages and intelligence. For instance, it was said that there were thousands of young men conscripted between the ages of twenty-one and thirty-one who were supported by their fathers, mothers or other women. Practically all these conscripts were physically unfit, as they were physical and moral cowards, but, note the change when these men were put in camps under army discipline, with outdoor life, simple food, regular hours, and medical and surgical attention. Thousands of these men, though physically unfit, were returned to health through association with real men. All to the credit of our Government, for the result was most astounding.

The medical profession is aware of the fact that in the treatment of syphilis by salvarsan we have to depend to a large extent on the use of mercury. The arsenical and other preparations have their place, but all agree that when administered alone salvarsan is not what we fully desire, and the effect is not what is claimed, therefore it is given in conjunction with mercury.

Our method of exhibiting mercury was by fumigation and inhalation, and it produced excellent results in General Hospital No. 5. When first I saw the fumigation inhalation treatment I was rather skeptical of its results. The mere covering of a patient with a sheet and letting him inhale the smoke or vapor until the mass was burned out seemed too simple to be true. Experience has taught me not to be too hasty in judging. Notwithstanding my doubts at that time I have come to the conclusion since then, that this form of mercurial administration is ideal; and noting its results, the treatment appeals to me, in that it is a much easier and more pleasant way of treatment than by the hypodermic, intravenous, intragastric, or inunction methods. The unvaryingly excellent results with the fumigation inhalation of mercury in all stages of syphilis surpassed expectation, and in addition to curing the active symptoms, in many instances it changed a positive Wassermann reaction to a negative where salvarsan had been previously given and failed. Positive Wassermann reactions become negative in from ten days to three months, without further treatment than the original six or nine inhalations.

This treatment can be given fearlessly because it is simple, and is without the difficult surgical technic required in the giving of intravenous injections of arsphenamine. It does not incapacitate the patient for his work, nor is there any fear of such dreaded consequences as sudden collapse, or even the death of the patient. There is no pain or unpleasantness in the fumigation inhalation treatment, there is no danger to the respiratory tract, kidneys, nor to any organ of the body. It can be given in the office, and there is no need for any physician to turn his venereal cases over to specialists. Every practitioner can treat syphilis in the primary, secondary, or tertiary stages in his office and get as good, if not better, results with this simple form of treatment as the specialist with his intricate equipment, sterile needles, sterile solutions, nurses in spotless uniforms, and what not, which make a mountain of a mole hill. Give the treatment yourselves and compare the results with those of your colleagues who use arsphenamine injections.

This fumigation inhalation treatment was given years ago, but had been discarded by syphilologists. Nothing was then known of the spirochetæ pallida, which caused the disease, nor was it possible to tell when a cure was effected, or how to regulate the treatment. In those days the volatilization of mercury was not so successful as with the present mercury preparation. Today we know the cause of syphilis, as the spirochetæ are demonstrated from the scrapings of primary sores. We are also aided by the Wassermann reaction, and the Wassermann test is the proof that the fumigation inhalation of mercury produces better results. That this method offers a rational treatment for syphilis is evidenced by what has been done at General Hospital No. 5 at Fort Ontario and tolerated by the Government since the opening of that venereal hospital and up to the time when I left the service. Several of the army surgeons are still using the fumigation inhalation method in civil practice.

I have used the fumigation inhalation treatment with success in my private practice ever since leaving the army. At St. Vincent's Maternity Hospital, Philadelphia, in one particular case the blood showed a four plus Wassermann when the patient was admitted, the treatment was given ten days after the birth of a stillborn child. The rash or secondary lesions disappeared in five or six days, leaving only a few stains. The patient, however, became salivated; after forty-eight hours' rest this condition improved, and she was allowed to go home. Owing to the rapid absorption of mercury by fumigation and inhalation, skin lesions, mucous patches, chancres, and venereal warts seem to melt away with astonishing rapidity from the fourth to the sixth day of the inhalation.

Colonel Henry D. Thomason, M. C., in command of General Hospital No. 5, Fort Ontario, wrote me recently: "We are still getting good results with the smoke treatment, although the surgeon general does not approve of its purchase yet."

Dr. J. Lewengood, of New York, stated that this method of treatment was brought to his attention from a lay source and that he had made some improvements and alterations in the mixture and dose of the compound, and requested its trial in the venereal department of General Hospital No. 5, Fort Ontario. For want of a better name he called the preparation spirocide. This composition was submitted to the surgeon general for analysis and the report is as follows:

The analysis of spirocide as made by the chemist at the Walter Reed Hospital, Washington, D. C. The preparation is in the form of punk.

ANALYSIS.

Average weight of one dose	10 grams
Moisture, H_2O	19. per cent.
Dry vegetable matter	34. per cent.
Glucose (?)	2. per cent.
Metallic mercury	23. per cent.
Copper sulphate $CuSO_4$ $5H_2O$	22.5 per cent.
Calcium carbonate	2.3 per cent.
Ferric oxide	9.3 per cent.
Potassium combined	9.8 per cent.
Gangue (sand)	2.2 per cent.

The compound consists of metallic mercury ground to emulsion with some chalk and probably honey, mixed with copper sulphate and finally with dried leaves, as moss. On burning this substance over an alcohol lamp an ash containing the following substances remains.

The percentages are based on the original ten gram sample:

SO_4	3.02 per cent.
Copper (as CuSO)	0.75 per cent.
Copper oxide (Cu_4O)	6.61 per cent.
Calcium oxide (CaO)	0.47 per cent.
Potassium	0.77 per cent.
Gangue	2.20 per cent.

Total nonvolatile material, 13.82 per cent.

As I said before, the administration of mercury by inhalation years ago was discarded by syphilologists because of the difficulty experienced in volatilization. Dr. Lewengood believes that its efficiency is due not only to the property of volatilization, but to the combination of the drugs employed. He sustains the assertion by separating the component parts of the preparation and trying each separately in combinations other than the above and failing to obtain results.

There have been approximately a hundred cases of syphilis in various stages and variations treated by this method at General Hospital No. 5, all with uniformly quick and favorable results. In comparison with 250 similar cases treated by standard methods, the results obtained by the mercurial fumigation inhalations have been decidedly more efficacious.

The question is frequently asked, "You are not sure that syphilis is permanently cured by the inhalation method, are you?" My answer is, "No," but so long as we get negative Wassermann reactions, and the active symptoms disappear, and open lesions are cured, it is as much as can be expected of any treatment.

If in the course of time certain traits of the disease are discernible, and it is proved that the ailment still persists, the only thing to do, as far as I can see, is to give another course of the treatment, as in other methods, until conditions improve and the blood test is again negative. What we do state is that as far as our present knowledge is concerned, the fumigation inhalation method is the simplest and most effective treatment for syphilis; it often succeeded where salvarsan had previously failed.

I have been aided in this report by quoting from the following authorities: Frank R. Keefer, A. M., M. D., professor of Military Hygiene; Colonel Henry D. Thomason, Medical Corps, General Hospital No. 5, Fort Ontario, Oswego, N. Y.; Dr. Lewengood, New York; Major N. Bodenheimer, formerly of General Hospital No. 5, Fort Ontario, N. Y.

A report of several cases treated by the fumigation inhalation method is presented below:

CASES IN THE PRIMARY STAGES.

Case I.—Pvt. E. B., Recruit Camp, Syracuse, N. Y. Chancre, April 20, 1918. Admitted September 17, 1918, ulcer on glans penis and mucous patches in the mouth which had been present since September 10, 1918. September 19, 1918, spirocide by inhalation daily for six treatments. Severely mercurialized salivation, gastric pain and weakness, which lasted three weeks. October 1, 1918, chancre healed, patient badly salivated. October 15, 1918, mouth clear, no mucous patches to be found. All outward symptoms due to treatment have disappeared. Wassermann: November 5th, double plus; December 7th, minus.

Case II.—Pvt. P. C., Recruit Camp, Syracuse, N. Y. Chancre on prepuce September 10, 1918, which progressively enlarged. Admitted September 19, 1918, with a large chancre on prepuce. Received spirocide inhalation on September 20th and daily for six days leaving practically no scar and very slight adenopathy. Wassermann: September 21st, double plus; November 25th, minus.

Case III.—Pvt. C. C., Recruit Camp, Syracuse, N. Y. Chancre August 15, 1918. Admitted September 4, 1918, with chancre on prepuce, spirochetæ found. Received six treatments with spirocide, commencing September 21, 1918. Wassermann: September 21st, double plus; November 25th, minus.

CASES IN THE EARLY STAGES.

Case IV.—Pvt. E. P. A., Recruit Camp, Syracuse, N. Y. Denies infection, had an ulcer on the left leg above ankle from the age of twelve. Admitted October 21, 1918, ulcer on pillar of right tonsil. Spirochetæ present. Enlarged submaxillary glands right side. Ulcer present for the past thirteen days. October 22, 1918, spirocide by inhalation, daily for six treatments. Considerable salivation with loose teeth persisting for a week after completion of treatment, when all these symptoms disappeared. November 1, 1918, ulcer on tonsillar pillar healed. Submaxillary glands almost normal in size. Old ulcer of leg healed rapidly after treatment. Wassermann: October 22d, double plus; December 18th, double plus.

Case IV.—Pvt. L. M. C., Recruit Camp, Syracuse, N. Y. Ulcer on glans involving frenum from May 11, 1918. Was treated locally and healed in four weeks. No secondary symptoms. Admitted September 25, 1918, scar of ulcer on glans with absence of frenum. No symptoms. Given treatment with spirocide commencing October 9, 1918. Wassermann: September 30th, double plus; November 27th, plus minus.

Case V.—Pvt. G. D., Albany N. Y. Chancre on prepuce in March, 1917, following macular eruption. Immediately received five salvarsan injections and three of an unsoluble mercury. No other symptom until August 8, 1918, when syphilitic ulcers appeared on the scrotum. Admitted September 12, 1918, with four ulcers on interior surface of scrotum, which grew progressively worse until treatment with spirocide commenced. September 16th commenced treatment with spirocide by inhalation. Daily treatments given for six days. Healing of ulcers commenced after third treatment and was complete in one week. Wassermann: September 13th, two plus; October 5th, one plus. Returned to duty before another Wassermann was taken.

Case VI.—Pvt. D. McD., Recruit Camp, N. Y. Chancre on June 15, 1918, which healed in six weeks. On August 1st maculopapular eruption appeared over the whole body. September 1, 1918, sore throat, no treatment received. Admitted September 8, 1918. On September 9th had two plus Wassermann. On admission had a pronounced maculopapular eruption covering whole body, which had existed for three weeks and was progressively getting worse. Had one salvarsan treatment on September 9th. On September 10th he began inhalation of spirocide continuing daily for six doses and an additional treatment on October 5th, 6th and 7th. Eruption began to fade after fourth treatment and improvement continued rapidly. At present, November 1st, only stains are apparent. Wassermann: September 9th, double plus; November 25th, minus.

CASES IN THE LATE STAGES.

CASE VII.—Pvt. J. R., Recruit Camp, Syracuse, N. Y. Chancre November, 1917, followed by rash, had five salvarsan injections at that time. No symptoms until August 25, 1918, when mucous patches in mouth and rash appeared. Admitted September 10, 1918, mucous patches in mouth and throat and maculopapular rash, both existing since August 25, 1917. September 16, 1918, spirocide by inhalation daily for six treatments. October 1, 1918, mucous patches and rash began improving, September 19th. October 15, 1918, mucus patches and rash entirely gone except for some stains. Wassermann: September 11, 1918, two plus; October 15, 1918, two plus; November 19th, minus.

CASE VIII.—Pvt. E. R., Recruit Camp, Syracuse, N. Y. Chancre on prepuce April, 1918, which healed in three weeks. Mouth became sore about September 1st. Admitted September 23, 1918, with mouth in bad condition from mucous patches. Received six treatments with spirocide commencing September 24, 1918, was badly salivated with severe stomatitis which took three weeks to clear. November 1st, mouth entirely healed; no evidence of mucus patches. Wassermann: September 24th, double plus; November 27th, minus.

SECONDARY LESIONS.

CASE IX.—Pvt. M. E. L. No history of initial lesion. While on duty at General Hospital No. 4 syphilitic rash and sore throat developed and positive Wassermann was given. Was given five doses of salvarsan and thirty-six inunctions of mercury. The rash and mucous patches cleared, but severe laryngitis with aphonia and positive Wassermann persisted. He was finally transferred to this hospital. Admitted September 24, 1918, with severe laryngitis and syphilitic laryngeal ulcer located near vocal cord; could not speak above a whisper. Received treatment with spirocide on October 10th, 12th, 18th, 19th, and 20th. At completion of treatment ulcer was healed and voice began to clear. December 10th voice normal and no evidence of laryngitis. Wassermann: November 27th, double plus; December 10th, minus.

CASE X.—Pvt. C. G., F. A. R. R. Gave history of chancre January, 1918, followed by generalized eruption and sore throat, had treatment for some time, no further symptoms except occasional sore throat until March, 1918, when he had continuous headache and sore mouth. May, 1918, while with A. E. F. had pain in back, headache, vertigo. July, 1918, Wassermann two plus, Base 24, A. E. F. He received salvarsan at this hospital. On September 9, 1918, he was admitted to this hospital with pain in spine which was severe, headache, constant dizziness. Could not stand erect, stooped at an angle of forty-five degrees. Began spirocide September 21, 1918, took one daily for six days, then a rest of two weeks, when he took three more. October 15th, spinal pain, headache, and dizziness have almost disappeared. November 1, 1918, no pain, dizziness gone, stands erect, spinal fluid is negative.

CASE XI.—Corp. C. F., Co. E., 58th Inf. Entered hospital November 3, 1918, from Debarkation Hospital, Newport News, with no history of chancre. Complained of pain in head, dizziness, and pain in joints. Blood Wassermann two plus. Spinal fluid plus. Eyes reacted to light and accommodation, but sluggish. The report from the eye, ear, nose and throat department stated that the patient was unable to speak above a hoarse whisper. Old scar on lateral side of right larynx. Small scar in centre of uvula, redness of all tissue about larynx, cords thickened. Began treatment with spirocide daily for six days. January 2, 1919, discharged to duty. Had gained flesh and reported he had not felt so well for the past four years.

5233 CHESTER AVENUE.

BRONCHOPULMONARY SPIROCHETOSIS (CASTELLANI).*

Report of Two Cases.

By MOISE D. LEVY, M. D.,
Galveston, Texas,
Associate Professor of Medicine and Clinical Pathology, University of Texas Medical Department.

The attention of the profession (1) was recently directed to the numerous cases of Castellani's bronchitis being reported from various parts of the world, and to the probability of like infections occurring in this country. That this was most probable was suggested as a result of the close association of the American troops in France, Germany, and Italy, with groups from areas which were known to have been infected with the spirochete.

Castellani's first descriptions (2) of this disease appeared in 1905 and 1906, when he reported two cases observed by him in Ceylon, in the sputum of which he observed spirochetes in large numbers, differing from the spirochetes usually seen in the mouth. His observations were quickly confirmed by Branch (3) in the West Indies, who reported a case showing a mixed infection, pulmonary tuberculosis being found at necropsy, while during life large numbers of spirochetes only were present in the sputum.

In Castellani's original article (3 and 4) he divided the spirochete morphologically into four groups, as follows: first, spirochetes fifteen to thirty micra in length, with irregular waves, which varied in number but were never numerous, the spirochetes being pointed at both ends; second, spirochetes resembling the Spirochæta refringens (Schaudinn), with few graceful curves and pointed extremities; third, spirochetes that were thin, delicate, with numerous small, rather uniform waves and tapering ends; fourth, very delicate spirochetes, thicker than the

---

*From the Department of Internal Medicine, Medical Department, University of Texas.

Spirochæta pallida, with few waves, generally irregular in shape.

Fantham (5) states that the organism presents marked pleomorphism, varying in length from five to twenty-seven micra, and in breadth about two to six tenths of a micron. These variations he considers "are due to processes of growth and division. The shorter forms, those from seven to nine micra, result from the transverse division of the longer forms. The ends of the spirochete show much variation in form, but approach the acuminate type on the whole. In the fresh specimen the movements of the Spirochæta bronchialis are very active but of short duration, the motile phase being succeeded by one of granule formation, the granules or coccoid forms serving as a resting stage from which new spirochetes are produced." It is also believed that the granules are probably the infective agent and spread the infection from man to man by the air.

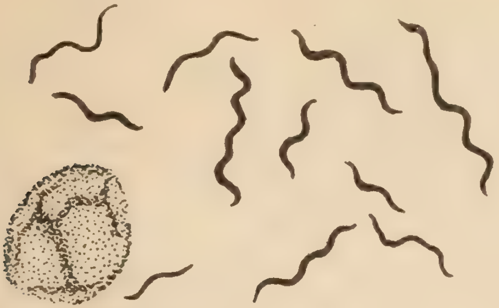


FIG. 1.—Spirochæta bronchialis (Castellani) from Case I. (Crenated red blood cell for comparing size).

Since the appearance of the first reports of bronchial spirochetosis, numbers of articles and reports have appeared from all over the world (6-7-8-9-17). Doubts were early expressed as to the new organism really being anything more than the usual mouth spirochetes, which had been aspirated into the bronchii. Macfie (10), after a careful study of the spirochetes in the mouths of natives of West Africa, found some spirochetes indistinguishable from those in the bronchial mucus. He considers very probable that the cases he observed may have been due to the invasion of the bronchii by spirochetes normally present in the mouth. Chalmers and O'Farrell (11) in Khartoum studied this organism carefully, carrying out successfully several inoculation experiments in monkeys. Their conclusions were that the "Spiroschaundinnia bronchialis (Castellani, 1907) is a good species, and that the different forms may probably be closely related to one another as different phases of growth and division of one and the same spirochete, rather than different species of spirochetes." Fantham (12), who was engaged in a study of spirochetes at this time, in Chalmers's laboratory, published his observations in 1915, stating that "Spirochæta bronchialis is a species distinct from the spirochetes occurring in the mouth. It differs from them in morphology, pathogenicity, and in staining reactions. It is not a developmental form of any bacterium, and is an entity in itself." The investigations of these two men, corroborating Castellani's original statements, has resulted in the Spirochæta bronchialis (Castellani) being accepted, as Fantham states, "as an entity in itself."

TYPES OF DISEASE.

Castellani (13) has described three types of the disease, caused by the spirochete, viz., the acute, subacute, and chronic types. In the acute type there is usually a chilly sensation and fever, which, however, rarely exceeds 103° F. The fever may last from two to eight days. Coughing is pronounced, expectoration scanty and mucopurulent, and rarely contains traces of blood. Rheumatoid pains all over the body may be complained of, otherwise in most cases the general condition of the patient is not much affected.

The attack in subacute bronchospirochetosis begins suddenly or gradually, and lasts from two to several weeks, many cases showing little or no fever, and no change in the general condition. The cough is frequent and a pink jellylike mucus is expectorated, although a true hemoptysis may take place. The physical signs of a simple bronchitis are usually present, though occasionally small patches of dullness may be associated with the crepitations. A slight anemia may be present in the blood, but the total and differential count of white blood cells is normal.

Chronic bronchospirochetosis may follow an acute or subacute attack, or more frequently may have a slow insidious onset. The symptoms and signs are those usually of a chronic bronchitis, but for periods of two or three days or longer the sputum may contain blood. Frank hemoptysis is not uncommon, a few drams to an ounce or more of blood being expectorated. These cases may also exhibit an irregular fever with either a morning or evening rise, and other findings of phthisis may be elicited, such as consolidation with râles in the chest, and emaciation. A slight degree of anemia is all that is noticeable in the blood. The course of the disease may be prolonged, and is essentially chronic. There may be periods of great improvement with apparent cures, varying with relapses of a severe nature, during which hemoptysis may be a prominent feature. As concerns life, the prognosis is considered favorable.

As far as we have been able to ascertain, reports mentioning the presence of pulmonary spirochetes have appeared only twice in cases from the United States. Rothwell (14), in 1910, reported a few cases observed by him in and around Kansas City, and later Peters (15), of Cincinnati, reported the presence of Castellani's Spirochæta bronchialis in some cases of fetid bronchitis and pneumonia, coming to autopsy.

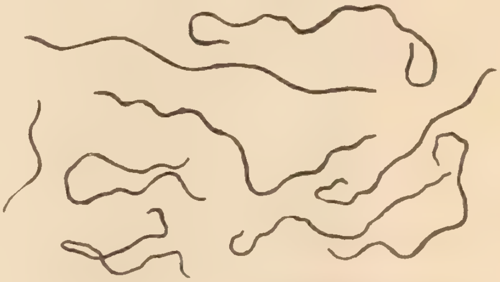


FIG. 2.—Spirochætæ from Vincent's angina.

During the past three years it has been our good fortune to have observed two cases, which we believe are due to the Spirochæta bronchialis (Castellani); a brief history of each case follows:

Case I.—Was a private patient of Dr. M. L. Graves, to whom our thanks are duly expressed for permission to include this record in our report. Mrs. J., white, aged thirty-seven, entered the hospital December 4, 1917, discharged December 9, 1917. Family history was negative, past history had no bearing on present trouble, which dated back fourteen years, with pain under the left shoulder blade, deep in the chest. She had felt as if something was forming in her mouth when asleep, waking up to find a brown flaky material on her lips and in her mouth, which would stain her handkerchief brown. Two years ago she felt something begin to run in her side, and began to spit up about half a teacupful of yellow material. Expectoration of this material had continued ever since, usually about an ounce, and frequently colored with blood, either fresh and liquid in character, or in clots. Had lost only a little weight in the past few years. Physical examination revealed a rather poorly nourished individual, weighing about 110 pounds. Positive findings were all localized in the upper portion of the left chest. Posteriorly just opposite the spine of the left scapula there was a small area of increased tactile fremitus, somewhat dull on percussion, over which the breath sounds were definitely tubular in character; fine crepitant râles were heard in showers occasionally at the end of inspiration. The sputum coughed up was rather offensive in odor, and frequent examinations for tubercle bacilli were negative. Each smear, however, was full of spirochetes with some fusiform bacilli. X ray examination of the chest showed some peribronchial thickening about the upper left bronchus, with a few calcified tubercles along its course. No active processes were located. The temperature was afebrile during the whole stay in hospital, but at other times there was a slight febrile reaction which would subside after the coughing up of a large quantity of sputum. The blood Wassermann was negative, red blood cells 3,888,000, hemoglobin 76 per cent., white blood cells 10,300, the differential count being normal. Three grains of sodium cacodylate were given intravenously twice a week and continued for about two years after leaving the hospital, during which time she felt fairly well, and had only a slight expectoration of a yellowish color—no blood. For the past year she had taken no cacodylate and had lost considerable weight, weighing only about ninety-five pounds. The pain in the left chest had returned and bloody sputum had been rather constantly expectorated. There had been no fever nor night sweats. A specimen of sputum was obtained about July 1, 1920, after the patient washed her mouth thoroughly with hydrogen peroxide. This specimen was examined for tubercle bacilli with negative results. An inoculation of some of the sputum into a guineapig was negative. The animal remaining healthy, it was killed at the end of five weeks, and the stained sections of the glands and the site of the inoculation showed no changes suggestive of tuberculosis.

The sketches, for which we are indebted to Dr. M. F. Boyd, show some of the spirochetes present in the specimen of sputum obtained this summer. A crenated red blood cell was drawn for comparison. Some of Vincent's spirilla from a definite case of Vincent's angina are sketched to show the difference between these two organisms.

Case II.—B. G., Mexican laborer, aged fifty-three, past history negative, presented himself at the outpatient department of the John Sealy Hospital, December 24, 1919, complaining of cough and expectoration of blood. The trouble began three days before, when he awoke at night with a coughing spell, and expectorated considerable blood. He had continued to cough up small amounts of thin bloody sputum, frothy at times, ever since. Had had some pain in the chest when he coughed, no fever. Entered hospital December 27th. Physical examination of the chest revealed a slight emphysematous change. Tactile fremitus and voice sounds slightly increased over the right apex posteriorly. Breath sounds a little rough, and an occasional fine moist râle at the end of inspiration was also heard. The examination otherwise was negative. He was discharged from the hospital January 4, 1920, feeling much better. Expectoration free from blood and normal in amount. Smears of the sputum obtained after disinfecting the mouth with potassium permanganate solution (1-1000) were negative for tubercle bacilli, but contained large numbers of spirochetes similar to those in the drawing from Case I. An x ray examination on December 20, 1919, showed a hazy appearance in the right upper lobe, with some infiltration extending well into the apex. No tubercles were visible; heart enlarged, some dilatation of the aorta. Temperature was normal during the entire stay in the hospital. Red blood cells 4,600,000, hemoglobin 70 per cent., white blood cells 7,600, differential normal, blood Wassermann negative.

On April 2, 1920, he was reexamined at our request. Since leaving the hospital he had been working on the streets, spreading wet mud shell. He had worked every day and felt perfectly well. He was not troubled with cough or expectoration. Examination of the chest by me and one of the instructors in the department, independent of each other, elicited only the usual findings of a slight degree of emphysema. No râles were heard. Sputum collected after forced coughing followed a thorough washing of the mouth with permanganate solution (1-1000) revealed a few spirochetes similar to those noted during his stay in the hospital. An x ray examination was made, the report showing the smaller bronchi prominent, with a hazy, filmy appearance of both upper lobes. A few active tubercles were reported in the upper right lobe, and some calcified tubercles in the middle and lower left lobe. Treatment of this patient consisted of a sedative cough mixture and a tonic of iron, quinine and strychnine.

DIAGNOSIS.

The diagnosis of this condition rests upon the microscopic examination of the sputum, collected after having the patient rinse his mouth well with sterile water or some antiseptic. It will be noted that we used hydrogen peroxide and potassium permanganate solution 1-1000 as a mouth wash. This we thought necessary, as the patients were suffering from a pyorrhea from which spirochetes might have entered the sputum. Observing these precautions and being certain that the specimen collected is really coughed up from the bronchial tubes, and finding the organisms in the stained smears in large numbers, are, in our opinion, *prima facie* evidence that the patient has bronchospirochetosis. Smears are made as usual and are stained with any of the ordinary aniline stains. We have found Wright's stain as used for blood smears, or a dilute solution of carbol fuchsin the most satisfactory stain. In positive cases the spirochetes are seen to be present in large numbers and other organisms are surprisingly scarce. After the acute symptoms have subsided, and when the patient appears to have recovered, a careful search of smears of the sputum is usually rewarded by the finding of a few spirochetes.

The similarity of the symptoms and signs of bronchial spirochetosis to malaria, influenza, and pulmonary tuberculosis, makes it imperative that a careful study of each patient be made before arriving at a diagnosis. Malaria may easily be eliminated by the absence of plasmodia from the blood smears, and influenza may be ruled out by a sputum examination and failure to find the Pfeiffer bacillus (if we are to consider this organism as the causative agent in influenza).

DIFFERENTIAL DIAGNOSIS.

It is the acute forms of bronchial spirochetosis which may be confused with the diseases mentioned. The chronic form is differentiated with more difficulty from pulmonary tuberculosis as the symptoms and physical signs of these two conditions may be identical. It has also been demonstrated that these conditions may coexist in the same patient, thereby increasing our difficulties. The absence of tubercle bacilli from stained smears after careful examination and concentration of the sputum, with many spirochetes being present, suggests strongly the diagnosis of spirochetosis. Inoculation of a guineapig with the suspected sputum should be done, when in the absence of tuberculous changes in the guineapig we may conclusively state that tuberculosis is not present. The value of the x ray in this condition is doubtful. Our second patient presented negative findings during the time when he was exhibiting definite pulmonary signs, while a report of active tubercles in the lungs was returned some months later when the patient was presenting no symptoms and a careful physical examination of the chest by two observers could elicit nothing definitely abnormal. Barker has stated, as have others, that when x ray findings of the lungs in suspected tuberculosis do not agree with the symptoms and signs and a careful physical examination, it is better to discount the x ray report. This we were inclined to do with our case.

In tropical countries bronchial spirochetosis must also be differentiated from endemic hemoptysis, this being comparatively simple, because of the absence of the ova of Paragonimus westermannii from the sputum. Bronchomycosis, which may occur in any climate, is eliminated by the absence of fungi from examinations of fresh sputum.

TREATMENT.

The symptoms in acute cases usually disappear after a few days' rest in bed. For the rheumatoid pains, salicylates or codeine may be necessary. If hemorrhage is a prominent feature, the usual remedies as employed in other pulmonary disorders are advised, such as morphine, icebag to the chest, calcium lactate, or, in severe cases, blood transfusions. The anemia is combated by the usual tonic remedies, of which iron in some form is the basis. In the way of specific treatment arsenic has given better results than any other drug used. Recently much success has attended the intravenous use of one of the arsphenamine products.

SUMMARY AND CONCLUSIONS.

The report of these two cases is made with the hope that a more careful study of the sputum of patients suffering from chronic cough will reveal other cases of bronchopulmonary spirochetosis. In a study of seventy-nine cases of chronic cough, Thompson (16) found the spirochete present in thirty-nine. In view of the wide distribution of the infection as evidenced by reports the world over, it is our belief that more cases will be brought to light by more careful investigations. The close similarity of the symptoms of bronchopulmonary spirochetosis to influenza, and especially to pulmonary tuberculosis, should constantly be borne in mind, and as a conclusive differential test from tuberculosis we would recommend an inoculation of the suspected sputum into a guineapig.

REFERENCES.

1. EDITORIAL: *Journal A. M. A.*, February 21, 1920, 532.

2. CASTELLANI: *Lancet*, May 19, 1906, 1384.

3. BRANCH: *British Medical Journal*, December 1, 1906, 1537.

4. CASTELLANI: *British Medical Journal*, September 18, 1909, 782.

5. FANTHAM, STEPHENS, and THEOBALD: *Animal Parasites of Man*, 739, William Wood, New York.

6. LEWIS: *U. S. Naval Bulletin*, January, 1920, 149.

7. VIOLLE: *Lancet*, December 7, 1918, 775.

8. BROUGHTON-ALCOCK: *Journal of Tropical Medicine and Hygiene*, December, 1919, 213. Abstracts of numerous French articles in this number of *Journal*.

9. NOLF: *Archives of Internal Medicine*, April, 1920, 429.

10. MACFIE: *Journal of Tropical Medicine and Hygiene*, March, 1915, 63.

11. CHALMERS and O'FARRELL: *Journal of Tropical Medicine and Hygiene*, November 1, 1913, 329. (Bibliography to date in chronological order appended.)

12. FANTHAM: *Annals of Tropical Medicine and Parasitology*, July, 1915, 391.

13. CASTELLANI and CHALMERS: *Manual of Tropical Medicine*, 3rd edition, 449, 1882, William Wood, New York. (Bibliography appended.)

14. ROTHWELL: *Journal A. M. A.*, June 4, 1910, 1867.

15. PETERS: Quoted by CHAMBERLAIN, *Philippine Journal of Medical Science*, 1911, 6, 489.

16. THOMPSON: *British Medical Journal*, December 28, 1918, 709.

17. BROWNE: *Journal of Tropical Medicine and Hygiene*, September 15, 1920, 225.

1402 AVENUE E.

MYOTONIA ATROPHICA.*

A Report of Two Cases Occurring in Brothers.

By I. T. Broadwin, M. D.,
New York.

The relative infrequency of this disease and the still greater rarity of its occurrence in brothers are the reasons for this report. These cases also present certain unusual endocrinological features. The chief symptoms are peculiarly distributed atrophies, a form of myotonia, present usually in the upper extremities alone, and altered electrical reactions.

Atrophies, which are almost invariably symmetrical have been described in the following muscles: orbicularis muscles of eyes and mouth, temporals, masseters, sternocleidomastoids, flexors and extensors of the forearms and wrists and the quadriceps and anterior tibial groups of the lower extremities. The spinal muscles are intact. The reflexes are depressed or absent according to the degree of wasting of muscles on which the reflexes depend.

The myotonic condition, which is usually present in the upper extremities, is described by the patients thus: "When I close my hands I get a cramp and cannot open them for some time." There is delay in extending the fingers from the flexed position of the closed hand. This wears off after a short while only to recur. This phenomenon is observed occasionally in the muscles of speech and mastication. The electrical reactions obtained show a diminished irritability to the faradic current and to a lesser degree to the galvanic current. In some cases, certain muscles show a modified myotonic reaction, namely, slow contraction and slow relaxation to both forms of electricity. The disease has been reported in members of the same family. In some cases, cataracts have been described in the patients as well as in unaffected members of the family.

Infectious disease as the etiological factor has been assumed by some. Many cases have had a slow and insidious onset without any history of causative infectious disease. The age of onset is usually between twenty and thirty but cases have been reported as early as the age of fifteen.

CASE REPORTS.

Case I.—G. R., aged thirty-two, single, born in Russia of Hebrew parentage. He first came to this country at the age of six, remained until the age of nine, and then returned to Russia. At the age of ten he came back to this country and has remained here ever since. He taught English to foreigners until six years ago, when he found himself too weak to do much walking or climb stairs.

His father died of pneumonia at the age of thirty-three. Previous to this disease he had been a healthy individual. The mother is sixty-four and is well. The grandparents on both sides were of healthy stock, and, he says, died of old age. There are no instances of this disease or of other nervous or chronic illnesses in the family. The parents had three children of whom the patient was the first. The second was a girl who died at the age of six. Intestinal obstruction was given as the cause of death by the physician. The third child is D. R., the second case to be described.

The birth and infantile development of the patient were uneventful. He had scarlet fever at nine years and typhoid fever at fourteen. His speech always had a nasal twang. At about the age of fourteen it was noticed that the patient was becoming weaker and losing weight. The development of this was so slow that no exact dates could be obtained. At about the age of sixteen it was first noticed that after closing his hands he had some difficulty in opening them. On leaving high school at eighteen, he gave lessons in English to foreigners up to six years ago. Since then he has been sent to various sanatoria under suspicion of being tuberculous. This was done on account of a cough and progressive weakness. At no time were tubercle bacilli found in his sputum. A year ago he was operated on for hypertrophied turbinates.

About five years ago a constant flow of tears from both eyes was noticed. By this time his eyelids began to droop, the right more than the left, and when sleeping his lids were only partly shut. His sexual life began at about eighteen. In the past five years he had slowly progressed to impotency. He never had any venereal diseases, and beyond the slowly progressing impotency had a normal sexual life. Alcoholism was denied. Diplopia, difficulty in swallowing and fatigue in chewing, were never complained of.

Physical examination. The patient was a thin and wasted individual. His head was bent forward. There was ptosis of both lids. The face was expressionless, the lower jaw hanging and tears were continually running down his cheeks. There was a marked hollowing of the temporal regions and the cheeks were sunken. The gait was shuffling. The speech was strongly nasal and at times almost unintelligible. There was a definite contrast between the upper and lower extremities, the uppers being much wasted.

The head was of the long type. The forehead was deeply wrinkled to overcome the ptosis of the lids. The ptosis was greater on the right side. The lids could not be raised or lowered against the slightest resistance. The eyes were deep set, the pupils regular, equal, concentric, and reacted readily to light and accommodation. The eye movements were normal. Nystagmus was not present. No evidence of cataract. The fundi were normal. The ears were large, but showed no stigmata of degeneration. The lips were pursed, the muscular power, however, being good. The tongue protruded in the median line and presented no fibrillary tremors or atrophy. The palate was arched. Many teeth were missing. The facial muscles showed good power.

The gait was shuffling without any evidence of drop foot. He could rise on the toes of either foot and hop. No tremors were present. Fibrillary tremors were not present. The myotonia was present in both hands only, the relaxation of the closed hand began by a delayed abduction of the thumb, the remaining fingers following in order. Atrophy of the temporal and masseter muscles was marked. The sternocleidomastoids were represented by fibrous strands. The muscles on the posterior surface of the upper arm were wasted and flabby. The deep muscles of the neck were unaffected. The shoulder girdle showed good power. Flexion of the forearm was good, the biceps muscles were brought into prominence by the wasting of the forearm extensors. Extension of the forearm was poor. Flexion at the wrist showed good power, extension at the wrist was weak. Pronation and supination of the arms were good. The grip in both hands was fair, the left better than the right. Flexion of the fingers was good; extension was weak. The movements of the thumb were unaffected. The muscles of the forearm were poorly developed. There was no atrophy present in the forearm or in the small muscles of the hands.

---

*These two cases are reported from the Neurological Dispensary Service of Mt. Sinai Hospital.

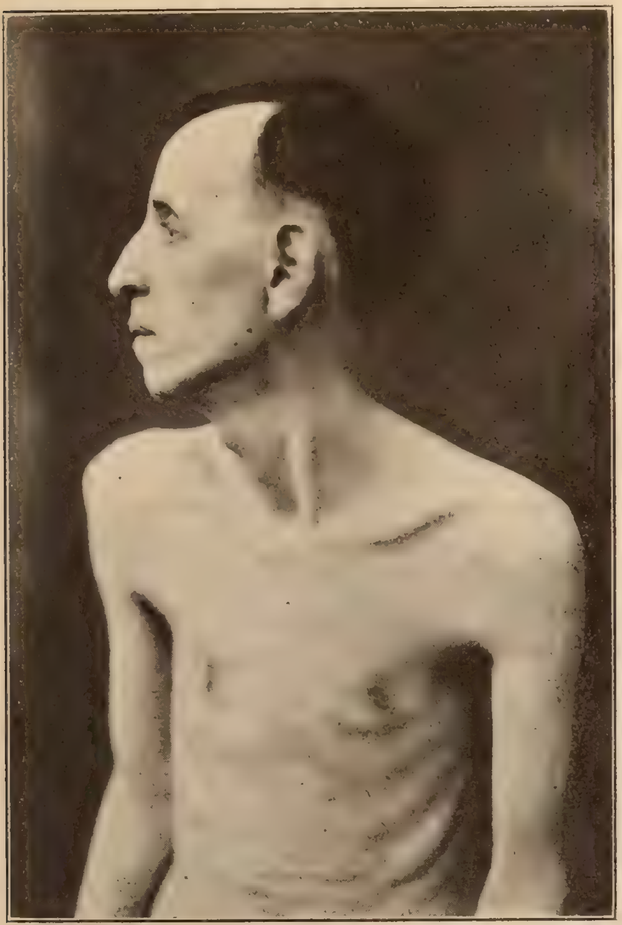


Fig. 1.—Case I, G. R.

The motor power of the spinal muscles was good The patient was able to raise himself from the recumbent position without difficulty. The lower extremities showed no wasting. Flexion and extension of the thigh were fair. Extension of the legs was rather weak; flexion of the legs was good. Dorsiflexion and extension of the feet were good. Touch, pain and temperature sense were normal. Ataxia and adiadochocinesis were not present.

The corneal and pharyngeal reflexes were present; abdominals and cremasterics present and equal. Stimulation of the plantar surface of the foot resulted in a downward movement of the big toe. Of the tendon reflexes, the biceps and Achilles were only obtained. Ankle clonus not obtained. The Romberg was negative. The chest was long and flat with marked intercostal depressions. There was flaring of the scapulæ. Examination of the heart and lungs revealed no abnormal findings. The pulse was seventy-two and blood pressure 105-60. Abdominal palpitation revealed nothing abnormal. The genitalia appeared normal. Palpation of the testicles revealed a marked atrophy. The skin was rather dry. Telangiectasis was present in both feet. The hair on the head was thin; on the rest of the body it was scanty. The patient shaved himself about three times a week. The hair in the pubic region though curly did not ascend to the umbilicus as in the true male type. There were no deformities in the osseous system. There were no glandular enlargements. The thyroid was not palpable. The Wassermann reaction and urine tests were negative.

Case II.—D. R., aged thirty, born in Russia, brother of patient in Case I. The birth and infantile development of this patient were also uneventful. He had the usual diseases of childhood. In this patient it was noticed from early childhood that his eyelids drooped, the jaw hung low and speech was nasal. He attended school till the age of fourteen, when he left in the upper grades. He then worked for a few months and stopped on account of progressing weakness. He had done no work since. At the age of fourteen he fell and several teeth were

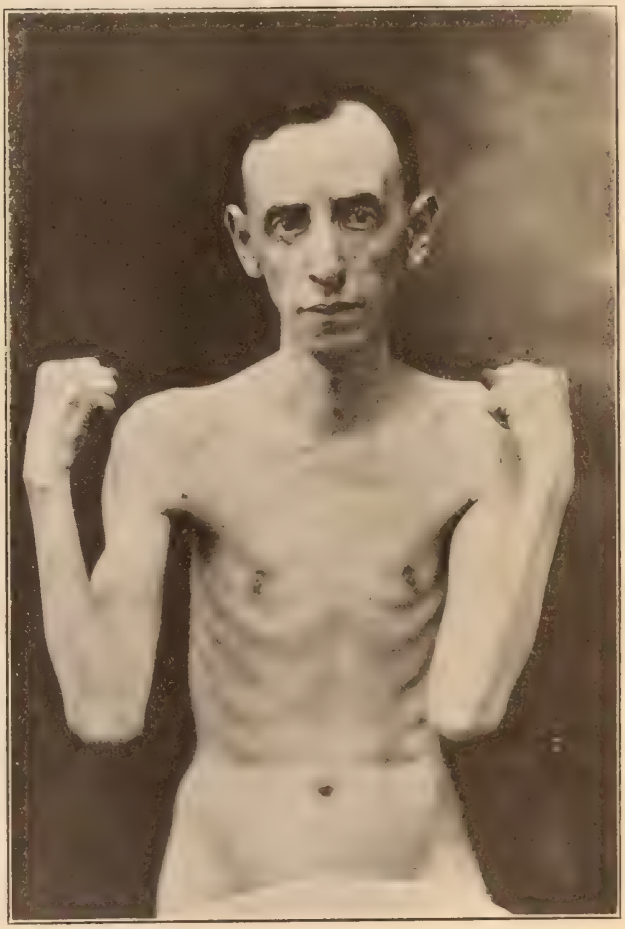


Fig. 2.—Case I, G. R.—Ptosis of eyelids is not shown here as the patient made an extra effort when he looked into the camera.

knocked out. His teeth then began to decay and fall out, so that at present but few remain.

He was accustomed to walk considerably until the age of fourteen; after that he was easily fatigued. At eighteen he noticed a cramp in his hands when he closed them. At about twenty he began to complain of a cramp in his right leg when climbing stairs or stepping up into a car. This, however, was never present when walking. He dated his emaciation back to the age of sixteen. At twenty-two he coughed considerably, and when his sputum was examined tubercle bacilli were found. He was then sent to a sanatorium, where he remained for two years; at the end of that time he was discharged as an arrested case. At present he can do no work on account of his weakness. The cramps in his hands are still present. His sexual life began at about fourteen with normal intercourse, which he continued with some degree of excess up to three years ago (aged twenty-seven). Since then he had become impotent. He never suffered from diplopia, difficulty in swallowing or difficulty in chewing. Venereal disease was denied.

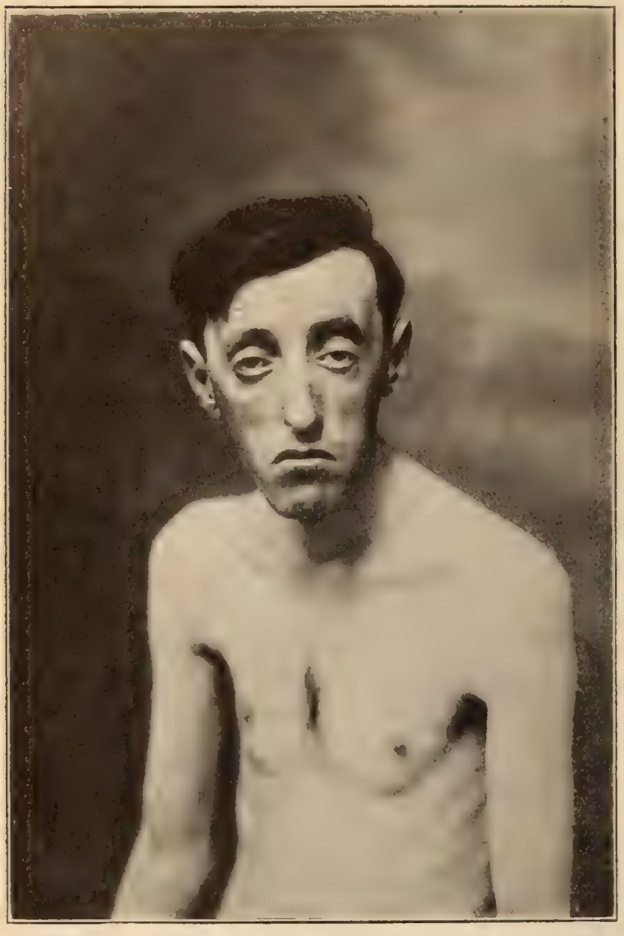


Fig. 3.—Case II, D. R.

Physical examination. This patient was shorter than his brother, thinner and more wasted. He bore a marked resemblance to his brother on account of the same drooping of the lids, bent head, wrinkled forehead and hanging jaw. The degree of this was more marked in the present case. His speech was strongly nasal. The gait was also shuffling; the temporal hollowing and sunken cheeks were present. The contrast between the upper and lower extremities was marked, the former being wasted.

The head was elongated; the ptosis of the lids was marked. The eyes could be completely closed, in contrast to those of his brother, who could only partly close his. There was a constant flow of tears from the right eye. The eyes were deep set, the pupils regular, equal and concentric. They reacted readily to light and accommodation; no ocular palsies or nystagmus; no evidence of cataracts. The fundi were normal. The ears were large. The lips were also pursed and their power good. A plate with false teeth was worn in the upper jaw. Only six of his own teeth were present. The tongue protruded in the midline and showed no tremors or atrophies.

The gait and posture were alike in both cases; drop foot was not present. The myotonia was the same, but no evidence of this phenomenon was found in the right leg.

The atrophies affected the same muscles as in Case I—the temporals, masseters, sternocleidomastoids and the muscles on the posterior surface of the upper arm. The motor power in this patient was, on the whole, poorer than in his brother. Here again the extension of the forearms and wrists was weak. The gross motor power of the unaffected muscles was fair. The spinal muscles were unaffected. The lower extremities showed no wasted condition. Extension of the legs was weak; the other movements

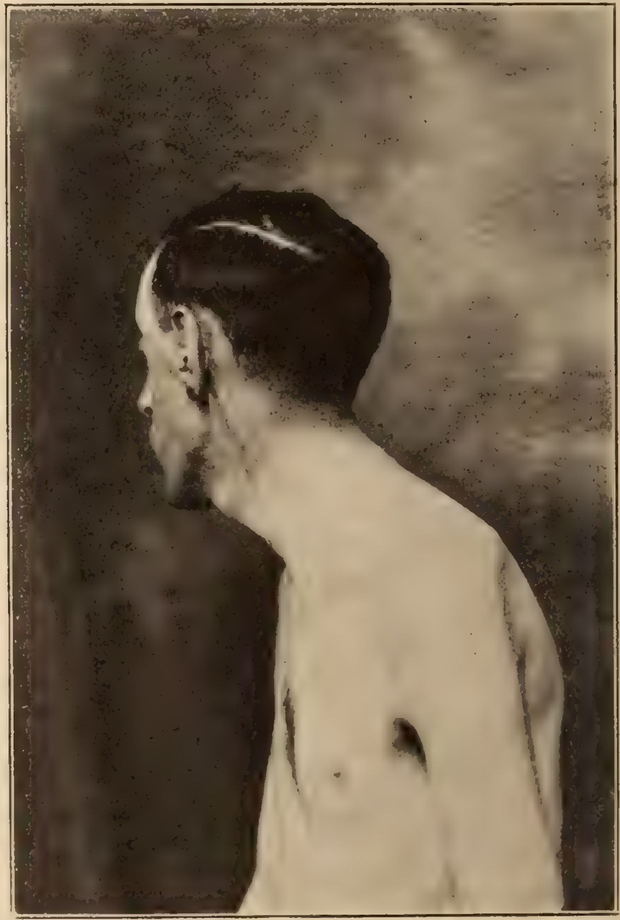


Fig. 4.—Case II, D. R.

showed fair power. The condition was exactly the same as his brother's.

The sensory examination revealed nothing abnormal. Ataxia and adiadochocinesis were not present. The corneal, pharyngeal, abdominal and cremasteric reflexes were present. The Babinski was negative. Of the tendon reflexes only the right and left biceps and the left Achilles were obtained.

The chest was long and flat, with marked intercostal depressions. There was evidence of an old tuberculous lesion of the apex of the right lung. X ray examination of the chest corroborated this. The heart revealed nothing abnormal. The pulse was seventy-two and the blood pressure 105-60. Abdominal palpation revealed nothing abnormal. The genitalia appeared normal, but on palpation the testicles were found to be markedly atrophied. The skin was dry. The hair was scanty in amount; he shaved himself three times a week. The pubic hairs did not ascend to the umbilicus. There were no glandular enlargements. The thyroid was not palpable. The Wassermann reaction and urine tests were negative.

SUMMARY.

The history and findings in these two cases were almost similar. The onset of the disease with weakness occurred in both at about fourteen years. The myotonia was noticed in the older brother at sixteen and in the younger at eighteen; in both there was extreme wasting. They showed no muscular hypertrophies at any time.

As to the etiological factor, one cannot say how important the typhoid fever in the older brother was because of the definite statement that the disease was very slow in onset. In the younger brother, many of the symptoms, such as ptosis of the lids, the hanging jaw and nasal speech were already present in early childhood. The endocrinological features are alike in both cases; the atrophied testicles and the atypical and scanty distribution of hair. The muscular atrophies were also alike.

So far as I know, this is the second instance of this disease occurring in brothers that has been reported in this country. In 1908, J. R. Hunt reported the first case in brothers. They were both born in Germany and were respectively forty-four and forty-one years of age. The onset of the disease in the older occurred in the early thirties and in the younger in the late twenties. They were both described as wellbuilt individuals, with exceptionally good muscular development of the trunk, shoulder and hip girdles and thighs. The muscles supplied by the cranial nerves showed no defect. Bilateral dropfoot was present in both. In the older, myotonia was first noticed at forty-one and in the younger at thirty-one.

In the older, the upper arms, forearms and calf muscles showed a well marked tapering atrophy, which was especially well marked in the triceps, ulnar side of the forearm and extensor surface of calves. Drop wrist was apparent on lifting the arms. Myotonia was present in the hands only. Gross motor power was well preserved in all the muscles except those of the arms and legs. There was almost complete paralysis of extensors of wrists and fingers, the flexors were weak, as were those of the intrinsic muscles of the hands. Almost complete paralysis of the peroneal and extensor muscles of the legs were present.

The younger brother had some difficulty when starting to talk, but after a time this would wear off. The muscles of the upper arms, forearms and lower legs were distinctly tapering and atrophic, especially the lower portion of the triceps, ulnar side of the forearm and anterior muscle groups of the lower legs. In the former case, the tendon reflexes of the upper and lower extremities were abolished; in the latter case only the knee jerks were present, and they were diminished.

In 1913 Bramwell and Addis, of England, reported this disease in three brothers. Two of them had atrophied testicles; the older one, who presented the most marked symptoms, complained of loss of sexual power. The other had no diminution of sexual power. The testes of the third were not examined.

BIBLIOGRAPHY.

HUNT, J. R.: *Journal of Nervous and Mental Diseases*, 1908, vol. xxxv, pp. 269-272.

BATTEN and GIBB: *Brain*, 1909, vol. xxxii, p. 187.

FOSTER KENNEDY and OBERNDORF: *Journal A. M. A.*, 1911, vol. li, p. 1117.

BRAMWELL and ADDIS: *Edinburgh Medical Journal*, vol. xl, July, 1913, pp. 21-44.

615 WEST 162D STREET.

FRACTURED SKULL

With Report of Case Complicated by Acute Mastoiditis; Operation and Recovery.

BY JOSEPH FRIEDMAN, M. D.,
Brooklyn, N. Y.,
Instructor, Nose and Throat Department, New York Post-Graduate Medical School and Hospital; Associate Attending Otolaryngologist, Beth Moses and Bikur Cholim Hospitals, etc.

AND SAMUEL D. GREENFIELD, M. D.,
Brooklyn, N. Y.,
Assistant Attending Opthalmologist, Beth Moses Hospital; Assistant Attending Otolaryngologist, Williamsburgh Hospital; Clinical Assistant, Nose and Throat Department; Manhattan Eye, Ear, Nose and Throat Hospital, N. Y.

Only rarely is the otologist called upon to treat skull injuries, such cases usually coming under the care of the general or brain surgeon. Basal fractures especially, constitute a most important and interesting variety; but the otologist is particularly concerned with those cases in which sections of the temporal bone are included in the line of fracture.

Injuries to the walls of the auditory canal are quite frequent and in themselves are of little consequence. It is only when, as a result of the injury, our fracture extends to deeper and more important structures, that serious complications are likely to follow. Of the cases observed in which the canal alone is injured, the osseous portion is more often affected than is the cartilaginous. Direct force applied to the chin or the ramus of the jaw is the most frequent cause for fracture of the walls of the auditory canal and especially is this true of the anterior wall. According to Hasslauer (1), who collected thirty-three cases of fracture of the walls of the meatus, fifteen were due to the application of violence at this site. J. C. Keeler (2) records a case of fracture of the tympanic plate in a girl aged seventeen years who fell from a motorcycle, landing on her chin. In this case as a result of the direct force against the interior maxilla the condyle of the mandible was driven backward against the posterior wall of the glenoid fossa, which forms the anterior wall of the bony auditory meatus. P. D. Kerrison (3) also reports a case somewhat similar in a woman who, when falling in a faint, struck her chin and a fracture of the tympanic plate resulted.

Injuries to the walls of the meatus are very often comminuted and especially is this true of the anterior wall, although exceptions are encountered. In the latter, they give rise less often to the more grave sequelæ. After previous suppuration with discharge of the bony fragments, they usually heal by the formation of osteophytes (Wagenhauser). Burnett (4) observed caries and necrosis of the injured anterior wall after violence applied to the inferior maxillary bone.

Next to force applied to the ramus of the jaw, the forceful and injudicious attempts at the extraction of foreign bodies is the most common cause for fracture of the osseous meatus. The fracture may occur at any point along the canal, but is most often encountered at the isthmus, for obvious reasons. J. P. Cassells (5) records a case of injury at the place of junction of the cartilaginous and osseous sections; the injury was produced by the prick of a steel pen and resulted ultimately in an inflammation of the mastoid cells.

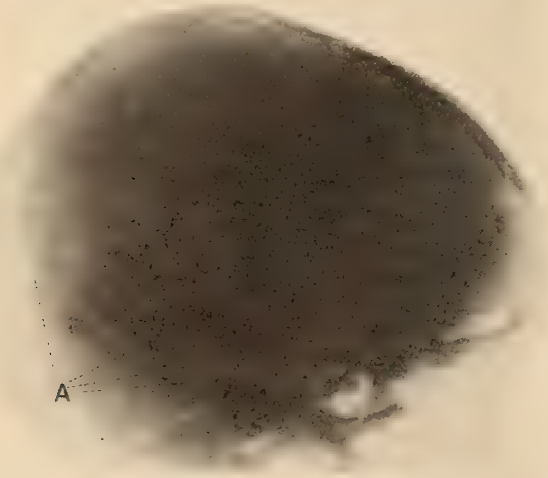


FIG. 1.—X ray photograph of skull in case J. R.; dotted lines show line of fracture.

As a rule, fractures of the meatus are seldom confined to this section, but are usually complicated with fissures of the superior and posterior walls of the tympanic cavity, of the mastoid, of the petrous portion of the temporal bone, and of the base of the skull. In the majority of cases, the tympanic membrane is found ruptured and the injury is accompanied by profuse hemorrhage (6). The chordæ tympani nerve may be injured and disturbances of taste on the corresponding side may be observed. Likewise, the facial nerve may be interfered with, but less often. If our fissure extends into the labyrinthine capsule we observe symptoms of disturbed vestibular function, to wit: headache, vertigo, vomiting, tinnitus, and deafness.

Fractures of the superior meatal wall are usually caused by the application of force to the vortex of the skull. These fractures are most often fissured and may extend deeply enough to produce simultaneous injury to the dura mater and terminate fatally by setting up a meningitis, and even a brain abscess. As a matter of fact, in searching through the literature one cannot help noting that in the large majority of these cases meningitis seems to be the most common complication and cause of death. Also, as occurs in most instances, the bloody discharge from the ear contains elements of cerebrospinal fluid at the time of injury. It is thus evident that the causative microorganisms gain access to the subarachnoid spaces along the break in continuity afforded them by the line of fracture. J. M. Smith (7) recently reported two cases of fracture at the base of the skull. These patients presented at the time of injury cerebrospinal fluid in the aural hemorrhage. Both cases terminated fatally, one with a meningitis and the second with a meningitis and brain abscess. The mastoid cells were secondarily infected in both instances.

Fractures of the posterior meatal wall are produced as a result of blows applied to the occipital region. They may lead to traumatic inflammation of the mastoid cells, a complication which occurs more often than one is wont to believe, and may even cause death from sepsis, following a thrombosis of the sigmoid sinus. A primary infection of the mastoid in this instance is not always an essential precursor to the thrombosis, for the latter may follow directly upon the injury. W. W. Carter (8) reports a case of fractured skull with a primary sinus thrombosis without the presence of infection of the mastoid at the time of operation. Several weeks after ligation of the jugular, an acute mastoiditis developed, which required operation.

It is apparent from the mass of literature that the prognosis in cases of fracture of the temporal bone, when our fracture penetrates the deeper structures, is always a grave one. This is rendered even more so when the cranial cavity has been entered as evidenced usually by the presence of cerebrospinal fluid in our hemorrhage. Yet Lucae (9) observed a case in which there was profuse discharge of cerebrospinal fluid which lasted for days and was not accompanied by any brain symptoms.

Among such fracture cases, as in other desperate cases that we are called upon to treat, we occasionally meet one that recovers despite all the serious complications that may supervene. The case we are reporting belongs in the category in which we find a rather extensive comminuted fracture of the entire posterior meatal wall, extending backward through the middle cerebral fossa, involving the lateral wall of the posterior fossa around as far as the median line. The case was later followed by infection of the mastoid cells upon which we operated successfully. During the procedure we removed part of the floor of the middle fossa, and in addition followed the line of fracture through its entire course. The patient made an uneventful recovery.

REPORT OF CASE.

John R., aged nine years, was struck by an automobile on February 3rd, and brought to the Williamsburgh Hospital in a state of profound shock. The scalp over the parietal and occipital regions was greatly infiltrated and was edematous. No break in the superficial continuity was noted, however. A profuse bloody discharge from the right ear was observed. Inspection revealed a rent in the lining of the cartilaginous and osseous canal, beginning on a line with the tragus on the superior canal wall and extending backward and inward beyond the annulus tympanicus. The position of the drum membrane was not disturbed, but there could plainly be seen a vertical slit in Shrapnel's, including the posterior fold, the edges of which were covered with fresh blood clots. Palpation revealed a fracture extending from the auricle backward beyond the parietooccipital suture. The x ray confirmed both the diagnosis and line and extent of the fracture (Fig. 1). Examination of the aural discharge failed to reveal any cerebrospinal elements.

Twenty-four hours after the injury the youngster was apparently comfortable. There were no evidences of disturbance of gustatory function (chordæ tympani) as far as could be ascertained, and no signs of facial involvement. The patient complained of a slight headache on the side of the injury, no dizziness, no vomiting, but there was appreciable impairment of hearing, with some tinnitus. In view of the fact that there were no symptoms of cerebral compression and no evidences of intracranial complications, the attending surgeon followed a more or less expectant plan of treatment.

The patient did well for about ten days, during which period there was present a slight mucopurulent discharge from the right ear. On the tenth day a rise in temperature was noted and within twenty-four hours reached 105° F. The aural discharge became profuse and assumed a more purulent character. We were then asked to see the case, and at this time the following was noted: Temperature, 102.5°; pulse, 100; respirations, 26.

The patient was conscious and responded quickly and intelligently to interrogations. He complained of severe pain over the right side of his head. The patient had not vomited nor complained of vertigo. The neck was slightly rigid; abdominal reflexes present; the knee jerks were normal, with the absence of both Kernig and Babinski. There was absence of spontaneous nystagmus and the eye grounds showed no abnormal changes. The mastoid region was edematous and markedly tender; the edema and tenderness extending backward well beyond the mastoid area. The discharge from the ear was copious and there was marked sagging of the posterosuperior canal wall. The entire auditory canal from the external meatus inward was markedly narrowed from the presence of edema and swelling. Spinal puncture revealed fluid slightly under pressure, without increased cytology or other pathological changes. The blood examination showed a white cell count of 17,000 with seventy-eight per cent. polymorphonuclears. A blood culture had been taken, but no report had been obtained at that time.

The clinical picture was fairly distinct, and we confirmed the diagnosis of acute mastoiditis with the further possibility of some intracranial complication, concerning the exact nature of which we reserved decision and advised immediate operation. The operation as we performed it was as follows:

The usual postauricular incision was made, the soft parts retracted, and the entire mastoid uncovered. The mastoid cells were mainly of pneumatic variety, being extensively necrotic and found to contain free pus. The lateral sinus was freely exposed and found to be covered at one small area with little fine granulations. There were no evidences of the presence of a thrombus and great care was exercised not to disturb the granulations. The bone around the meatus was comminuted, and a number of bone fragments, consisting of the posterior canal wall and part of the floor of the middle cerebral fossa, were gently dislodged, exposing the dura over an area a little more than one inch in diameter. The exposed dura over its entirety was uninjured and appeared normal. All the remaining diseased and necrotic cells were completely and carefully removed. When completed, the operation practically amounted to a radical mastoid (except for the remaining ossicles and the absence of the flap).

The line of fracture was then followed up. A transverse invision was made over its location and the soft parts and periosteum retracted. This disclosed a fissured fracture almost four and a half inches in length. The mastoid operation having removed the greater portion of its anterior extremity, it ran backward from the posterior limit of the mastoid cavity across the lower portion of the parietal bone into the occipitoparietal suture through the occipital bone to a point in the median line of the skull. This entire fissure was converted into a broad groove along its whole extent. This was done carefully and gently by means of a small and then larger sized Richard's curette. The groove was sufficiently widened to afford adequate drainage. Both incisions were now closed with interrupted silkworm gut sutures, and lightly packed with narrow strips of iodoform gauze. The outer dressing consisted of a large pack moistened with saline solution.

Twenty-four hours after operation the temperature dropped to 100° F. and thereafter never rose above this. On the third day we substituted dichloramine-T for the saline solution, with the most gratifying and pleasing results. The child left the hospital on the twenty-ninth day well on the way to recovery, the posterior incision having healed by primary intention and the mastoid wound rapidly granulating.

This case exemplifies the fact that the advisability of resorting to the expectant plan of treatment, in such cases, as long as there are no evidences of more serious complications, is yet an open question. This is especially true when we are certain that our fracture is a deep one and infection of more important structures is almost imminent. In addition, the presence of cerebrospinal elements in our aural hemorrhage at the time of injury adds greatly to the probability that sufficient avenues are open for infection of the cranial contents. And it is this particular point we wish to emphasize most strongly. The presence or absence of this element we believe is probably the most important factor in the outcome of our case, and whether we are justified in deferring surgical intervention, under these circumstances, until a time when the more serious complications are well established, must be decided.

May we not feel justified in instituting surgical intervention as a preventive measure rather than employ it when it is oftentimes too late? Furthermore, the advent of signs indicating extension of inflammatory process to the adjacent structures calls for immediate interference, and not alone this, but our intervention at times must be of the most radical form, following up our fracture along its entire extent, wherever accessible, opening widely all tracts, affording the best drainage facilities and so eradicating all possible avenues for reinfection. The surgeon must be fearless in his operative procedures and we are certain that fractures of the skull in which the otologist takes a hand might possibly turn out to be not so formidable a proposition as is commonly thought.

We wish to express our thanks to Dr. L. A. McClelland for the privilege of operating upon and caring for this patient.

BIBLIOGRAPHY.

1. Hasslauer: *Z. O.*, 1899.
2. Keeler, J. C.: *Laryngoscope*, 27, 192, March, 1917.
3. Kerrison, P. D.: *Annals of Otology, Rhinology, and Laryngology*, 1914, p. 474.
4. Burnett: *American Journal of Otology*, vol. ii.
5. Cassells, J. P.: *Glasgow Medical Journal*, vol. viii.
6. Politzer: Politzer, 5th Ed., 1909, p. 693.
7. Smith, J. M.: *Journal A. M. A.*, 72, 995, April, 1919.
8. Carter, W. W.: New York Medical Journal, June 23, 1917.
9. Lucae: *Berl. Klin. Wochenschr*, 1899.

691 Lafayette Avenue.

NEWER LABORATORY METHODS IN DIAGNOSIS AND PROGNOSIS OF DISEASED KIDNEYS.*

By A. I. Rubenstone, M. D.,
Philadelphia.

While the anatomical deviation from the normal kidney has been the subject of exhaustive study since the classical monographs of Bright, yet it availed the clinician little advance in the diagnosis and prognosis of renal disease that had not been known for many years. Not until recent years, when efficient methods of functional studies came into their own, did the internist benefit in the rational treatment of impairment of these most important organs.

The kidneys, as is well known, are highly specialized filters influenced by many factors, such as nerve control, internal secretion, toxin, reaction of blood and viscosity, which must coordinate in their action in order that renal function may go on in a normal state of health, so that we find that the kidneys in their selective affinity present a high threshold in the secretion of some substances from the blood, while others pass readily through them; e. g., uric acid is the most difficult of the nonprotein nitrogenous constituents to be excreted, while creatinine is the easiest.

While for a long time physicians generally had recognized that estimation of function in kidney impairment was very valuable in prognosing the outcome in a given case, yet the methods employed in the past were not only crude, but inefficient, in that attempts were made to estimate the value of a kidney by its ability to excrete substances that it normally does not have to contend with. The indigo carmin test, the phlorizin test, cryoscopy of blood and urine, all have had their vogue, but have been practically abandoned because of the meagre amount of information one could obtain from them.

The phenolsulphonephthalein test of Rowntree and Geraghty is probably the only dye test that does possess virtue in estimating kidney function, but its scope is limited. It is a very good method of estimating the kidney function for the moment, but it does not indicate the condition of the kidneys when objectionable constituents are retained for a long period of time in the body, so that the test fails to show accurately metabolic changes in the system as far as nonprotein nitrogen retention is concerned.

This was definitely shown by the work of Frothingham, Fitz, Folin, and Denis, and is well illustrated clinically by Foster, who reported a case of marked kidney disease with a normal phthalein output, in which the patient died. It remained for comparatively recent investigators to discover and perfect methods whereby the functional activity of the kidneys could be determined accurately by their ability to excrete substances that were normally permeable through them. At present, in a normal state of health, the important functional activities of the kidneys are: 1, nitrogenous secretion; 2, their ability to prevent acidosis by elimination of acids, and retention of alkalies; 3, water and total solid excretion.

Total nitrogen is eliminated in the urine by healthy kidneys in the proportion of about fifteen grams a day, and leaves the body as urea, creatinine, uric acid, ammonia and rest nitrogen. Since uric acid is the most difficult for the kidneys to excrete, it naturally follows that the least impairment in kidney function will react in the retention in the blood of an excess amount of uric acid than normally found while the urea and creatinine will be excreted in normal amounts, and the blood will show no excess of these constituents. Furthermore, kidney embarrassment in function is evidenced by impairment in excreting urea, so that blood retention of urea is next brought about, and depending upon the severity of the case, or its acuity and duration, there is a corresponding increase in this most important substance retained in the blood.

Finally, in the very severe types of nephritis, creatinine is withheld and the blood shows an excess of this substance. Therefore it is quite possible to estimate the degree of organic change in the kidneys by the quantitative retention of these nitrogenous substances in the blood, when in some instances the urinary changes are exceedingly scant, and at times entirely absent. Too much emphasis cannot be placed upon the correct and trustworthy evidence of blood chemistry figures in diagnosing and prognosing cases of nephritis. Halsey's case may be cited as a typical one in which the patient, though well enough to visit his physician's office, and with no urinary findings, showed a grave condition in that he had marked retention of urea, uric acid and creatinine, pointing to a grave prognosis. The case ended fatally within twenty-five days. I have had two such experiences in the past five years.

---

*Read before the Northern Medical Association, Philadelphia, February 27, 1920.

The next important function of the kidneys in which the clinician is deeply interested is their ability to help maintain the normal alkali reserve of the body tissues by not only excreting an enormous amount of acid every day (amounting to several hundred c. c. normal acid), but saving bases, e. g., phosphates. When kidney function is impaired, acidosis in various degrees supervenes, and can be determined by the carbon dioxide tension in alveolar air; carbon dioxide combining power of blood, and by estimating the quantity of accumulated inorganic phosphates in the blood.

The estimation of variation in water and total solids excreted (estimated by specific gravity changes) is easily accomplished by the renal test meal of Mosenthal and Lewis, and by the Ambard coefficient. The various means mentioned above are such accurate indices of true nephritic impairment that in the cases which show symptomatology of mixed cardiac and renal disease, one can differentiate between a true renal condition and a secondary one, as in the latter class of cases almost uniform negative results are obtained in retention tests.

REFERENCES.

1. Foster, N. B.: *Archives of Internal Medicine*, vol. xii, 1913.
2. Halsey: *Journal A. M. A.*, June 10, 1916.

1208 Spruce Street.

THE RENORENAL REFLEX.*

With a Case Report.

By Wilbur H. Haines, B. S., M. D.,
Philadelphia,
Chief of Urological Department, St. Agnes Hospital; Assistant Urologist, Lankeman Hospital; Instructor in Urology, U. P. Post-Graduate School; Urological Consultant, U. S. P. H. Bureau.

and K. P. A. Taylor, A. B., M. D.,
Philadelphia.
Resident Physician, University of Pennsylvania Hospital.

The existence of reflex pain or anuria in a healthy kidney has always been looked upon with skepticism. Before the advent of modern methods of urological diagnosis, viz., ureteral catheterization, the röntgen ray and the pyelogram, such skepticism was well founded. Thornton, in 1887, first reported a case in which an operation performed for the relief of renal colic was unsuccessful in finding a stone, and in which a stone was subsequently passed.

Thornton first formulated the idea of renorenal reflex. Godlee accepted the theory, but Henry Morris enthusiastically denied it. He stated that the kidney on the side in which pain was felt was always diseased, and that any relief of pain by operation upon the other side was purely coincidental, or was caused by the shifting of a calculus. Morris's views coincided with those of the majority.

With the advent of the röntgen period, however, it has been possible to study the problem accurately for the first time. Apparently about ten cases of renorenal reflex pain or anuria or both have been reported with complete studies by x ray and catheterization. To this number may be added the following case:

Case. H. W., aged thirty-eight (capt. infantry was referred by Dr. G. L. Collins. On March 1, 1919, the patient had an attack of pain in the right lumbar region which lasted two hours. The pain was not of the sharp colicky nature usually associated with calculus. It did not radiate. On April 2d a similar attack was experienced; it again lasted two hours, and was not severe enough to send the patient to bed.

On June 8, 1919, the patient was seized with a very sharp pain in the right lumbar region radiating to the groin. This was associated with frequency and burning; also nausea and some vomiting. The pain was of prostrating severity with intermissions; this condition lasted for four days. There was then a period of complete relief for a week, succeeded by another attack similar to the last, which persisted for five days. In this attack, as in all former ones, the pain was confined entirely to the right side. There was marked tenderness over the right kidney, none over the left.

The patient was cystoscoped and the ureter catheterized. No urine was eliminated from the left ureter. The urine collected from the right side was acid in reaction; specific gravity, 1.023; contained no albumin or sugar, no casts or cylindroids, and no cells except occasional epithelial cells and a small amount of mucus. Repeated daily examinations of the total urine showed little variation from this picture. The phenolsulphonephthalein elimination from the right kidney was thirty per cent. in thirty minutes. Prompt elimination of indigo carmine occurred within five minutes after intravenous injection of four tenths of one per cent. solution on this side also. There was no elimination of either dye from the left kidney. The left ureter was found to be patulous for sixteen cm. The röntgenogram revealed multiple small shadows in the pelvis of the left kidney. No urine appeared from the left ureteral orifice during any of the cystoscopic examinations.

Operation.—Through the lumbar incision the left kidney was exposed and mobilized. It was about twice the normal size, and the pelvis was disproportionately dilated. The pelvis was full of small stones ranging from the size of a shot to that of a pea. Because of the doubt as to the functional capacity of the kidney, it was excised. The pathological report was, chronic interstitial nephritis.

Convalescence was rapid and uneventful. A year from the date of operation there have been no symptoms of any kind. The case has especial interest because it is one of the few reported in which the pain was limited entirely to the sound side.

LITERATURE.

Blum (1), Rumzel (2), Newman (3), Haenisch and Josephson (4), and Fowler (5), have all reported cases of reflex kidney pain in which the diagnosis was established principally by the x ray and confirmed by operation. The average duration of attacks of pain in these cases was five years, the longest being sixteen years and the shortest a few days. In all of these cases the pain was sharp and severe, and was felt only on the unaffected side. It seems highly improbable that compensatory hypertrophy of the healthy kidney—a process which is now so frequently observed and which is so infrequently attended with pain—could cause pain of such persistence and severity. Pyelitis of the sound kidney was apparently entirely excluded in only four of the ten cases assembled, but in some no reference was made to this, and we may suppose the urine from the healthy kidney to have been normal. With good technic, only about ten per cent. of kidney stones (usually uric acid stones) are not revealed by the x ray, so this may be safely eliminated.

---

*Read before Philadelphia Genitourinary Society, November 22, 1920.

Bijnen (6) is the most recent antagonist of the renorenal reflex theory. He reports six consecutive cases in which a pyelitis on the sound side accounted for the pain in five cases, and a gastric ulcer in the sixth. Fowler's article (6) is the best review available.

ORIGIN OF THE REFLEX.

A brief study of the anatomy and physiology of the innervation of the genitourinary tract offers ample explanation of the renorenal reflex. The renal plexus is made up of the solar and aortic plexuses, the last splanchnic nerve and sometimes the last dorsal nerve. The renal plexus is intimately related with the hypogastric plexus, and with the spermatic, deferential and ureteral plexuses. The entire genitourinary apparatus is supplied by these structures. Kidney pain is commonly referred down the corresponding ureter to the corresponding testicle, but it is not unheard of for the diseased testicle to reciprocate by transmitting its pain to the corresponding kidney area, as seen notably in acute epididymitis. The widespread ramification of pain occasioned by a blow on the testicle is well understood. It may be found that pressure upon a certain part of the kidney or its pelvis is referred to the opposite side. The tract for the pain reflex is afforded by the connection between the two semilunar ganglia of the solar plexus. Or possibly in these individuals the viscerocutaneous and visceromuscular pathways are developmentally transposed so that they communicate with the opposite kidney area.

CONCLUSIONS.

1. A case of reflex kidney pain is added to those already reported.
2. Modern methods of diagnosis have not refuted the renorenal reflex. Cases such as the above point rather to the importance of careful cystoscopic and röntgen ray study of all suspected surgical kidney cases, and the neglect of such study prior to operation could only justify the accusation of negligence.
3. Disease of the healthy kidney as well as disease of the corresponding genitourinary tract must be eliminated before a diagnosis of renorenal reflex can be made.
4. The reflex is easily explainable on anatomical grounds, but its exciting cause is not understood.

REFERENCES.

1. BLUM: *Wien. klin. Woch.*, 1907, No. 40, 1208.
2. RUMZEL: *Fortsch. a. d. geb. d. Röntgen*, 1904, x, 7.
3. NEWMAN: *Lancet*, 1909, i, 1111.
4. HAENISCH and JOSEPHSON: *Nord. med. Ark.*, 1911, xliv, No. 17.
5. FOWLER: *Surgery, Gynecology, and Obstetrics*, 1916, xxii, 454.
6. BIJNEN: *Nederland Tijds. voor Genees*, 1916, No. 11.

MEDICAL ARTS BUILDING.

INFLAMED EYES.

Diagnostic Points for the General Practitioner.

BY S. A. AGATSTON, M. D.,
New York.

Assistant Surgeon, New York Eye and Ear Infirmary; Adjunct Assistant Attending Surgeon, Bellevue Hospital; Adjunct Ophthalmologist, Montefiore Home.

The ophthalmologist frequently sees serious eye conditions which the general practitioner has erroneously treated as conjunctivitis, before finally referring them to the eye specialist. Many diseases of the eye assume an outward appearance which by the inexperienced may easily be mistaken for simple conjunctivitis. A résumé of such conditions might prove of value as an aid in diagnosis, and might save many eyes, as proper treatment instituted early in the course of the disease is an important factor.

The following are the diseases which may be placed in this category: Conjunctivitis, trachoma, follicular conjunctivitis, vernal catarrh, foreign body in the conjunctival sac or on the cornea, traumatism, burn by chemical agent or light, eyestrain, keratitis, ulcer of the cornea, phlyctenular conjunctivitis or keratitis, blepharitis, dacryocystitis, hordeolum (stye), episcleritis and scleritis, glaucoma, iritis, iridocyclitis, orbital growth, and intraocular growth.

It is impossible to make a diagnosis in the case of a red eye by a casual superficial examination, yet a careful and systematic examination will make it possible for any practitioner to come pretty near to making a correct diagnosis. The method of examination is as follows:

After looking at the eye, turn down the lower lid, look for follicles of trachoma, or follicular conjunctivitis. Then evert the upper lid. In trachoma the follicles are also present on the upper tarsus. The follicles of follicular conjunctivitis are round or oval and discrete, in rows like streptococci, whereas in trachoma they are irregular in shape and arrangement. The elevations on the upper tarsus, which are caused by vernal catarrh, are flattened, hard and pavementlike; sometimes they are also found around the limbus of the cornea; the condition is accompanied by the secretion of a stringy discharge; there is also a history of recurrent attacks every spring, with improvement in cold weather.

In simple conjunctivitis the cornea is clear, the anterior chamber is clear, and the patient may or may not complain of photophobia. The next step in the examination, especially in monocular irritation, is to look for a foreign body on the upper tarsus, or the cornea, with oblique illumination, with the aid of a lens and magnifying glass. We sometimes find a foreign body on the cornea, which has not been discovered for weeks or months. Also look for cilia growing within the normal line.

If the cornea is universally cloudy, we may be dealing with acute glaucoma, iridocyclitis, or interstitial keratitis. Take the tension of the eyeball with both index fingers (the patient looking down), comparing the two eyes. Glaucoma is accompanied by pain and headache, the pupil reacting slowly to light and accommodation, but reacting better consensually when the light is thrown into the normal eye.

A smoky cornea may also be found in iridocyclitis. In the latter the cloudiness is heavier in the lower part of the cornea. Phlyctenules on the bulbar, or corneal conjunctiva, should be looked for; also look for abrasion and ulcer of the cornea. Opacities of the cornea may be caused by phlyctenular keratitis, ulcer of the cornea, trachoma, interstitial keratitis, trauma, burns, gonorrhea, or diphtheria.

Look at the iris with oblique illumination. A normal iris has a distinct, even, black, pupillary margin. If in the presence of a clear cornea the margin of the iris is diffuse, you are dealing with an iritis which is also characterized by the presence of a pigmented exudate on the anterior capsule of the lens. There is redness, pain, and photophobia. In iritis, the pupil is contracted unless a mydriatic has been used. In iridocyclitis, the eyeball is very tender around the limbus of the cornea. There is a ciliary injection of a violet hue and the cornea may look steamed. The pupil may be somewhat dilated, and the tension of the eyeball, during the acute stage, somewhat increased. There are deposits (round, gray, or brown mutton fat droplets) on the posterior surface of the cornea. The patient may complain of pain, or only of poor vision.

Hordeolum may begin with a diffuse edema of the lid, especially when developing near the canthi. The patient complains of a great deal of pain, and the lid is very sensitive to the touch. Episcleritis is characterized by a circumscribed violet injection of the scleral conjunctiva and sensitiveness to touch. Scleritis is not sensitive to touch and is generally luetic in origin. In blepharitis the conjunctiva is normal, or slightly congested, but the lid margin is red and crusty.

Edema of the conjunctiva, without pain or photophobia, may be caused by the presence of a retrobulbar growth, or some other condition causing obstruction to the venous return through the ophthalmic vein. This is usually accompanied by exophthalmos.

Ciliary injection may be caused by sarcoma of the chorioid. With this there is generally loss of vision and increase of tension. Slight redness of the conjunctiva may be caused by eyestrain due to refractive error.

Quite a severe conjunctivitis may be caused by exposure to strong light, such as is used in motion picture photography. Snowblindness is also accompanied by conjunctivitis. Conjunctivitis may be caused by exposure to severe elements, or may be secondary to nasal irritation or catarrh. Irritation of the eye may be produced by lagophthalmos and exposure caused by paralysis of the facial nerve. Paralysis of the fifth nerve will cause anesthesia and trophic disturbances. Purulent discharge may be caused by dacryocystitis. Pus may be expressed by pressure over the lacrymal sac.

140 West Seventy-ninth Street.

EXAMINATION OF WATER FROM THE GANGES RIVER, INDIA.

By Randle C. Rosenberger, M. D.,
Philadelphia,
Professor of Hygiene and Bacteriology, at the Jefferson Medical College.

I present below a bacteriological report of two samples of water from the Ganges River, sent to me for analysis by the Rev. William Waide, of Arlington Heights, Ill., with the following letter:

> The two bottles contain samples of water from the Ganges River at Hardwar, India, which is the point where the river issues forth from the Himalaya Mountains into the plains. The Ganges is considered holy at any point in its course but more so at Hardwar, and hundreds of thousands of Hindus come there every year to bathe in the waters of the Ganges River. The Hindu believes that no germ can live in the water of the Ganges River, not only the uneducated but also the educated Hindu believes this. Not only noneducated and some educated Hindus believe this, but we have met some English people who also believe it. They claim that you may take a sample of the water and bottle it and keep it any period you wish and a germ will never appear in it.
>
> The people bring the ashes of their deceased and throw them in the river at the bathing place and this no doubt purifies the water somewhat, but we cannot believe what they claim to be true. So I have taken two samples of this water; the water in the smaller bottle was taken from the river above the place where they bathe, and the water in the larger bottle was taken from the river below the bathing place. The water of this river they carry with them hundreds of miles to their homes and use it in various ceremonies, such as at birth, marriage, and death.
>
> The bottles and corks were boiled thoroughly before taking the samples of water.

Specimens consist of two bottles of water, one containing fifty c. c. and the other twenty c. c. Both samples are clear when left standing for a few hours, and throw down an abundant sediment. The sediment is more marked in the one taken below the bathing place. When shaken or disturbed each one is quite turbid. No odor was detected. When examined microscopically, the sediment was found to be made up mostly of crystalline material, diatoms and vegetable cells. Only a few bacteria were observed.

When plated and incubated for twenty-four hours at 37° C. there developed in the sample above the bathing place one hundred and fifty colonies per c. c., and none were of the acid or gas producing type. No presumptive evidence of the colon bacillus was observed in ten c. c. quantities.

In the second specimen, taken below the bathing place, twenty-five hundred colonies developed per c. c., of which one hundred and seventy were of the acid and gas producing type. This latter sample also gave presumptive evidence of the colon bacillus in ten c. c. quantities. When plated on Endo's medium, however, no colonies resembling the colon bacillus developed.

In a recent note received from the sender, the Rev. William Waide, it was stated that the water was bottled some time in July or August, 1919, and this examination was made May 3, 1920, so it is seen that these specimens were at least eight or nine months old.

2330 North Thirteenth Street.

ICTERUS GRAVIS.

By Charles Greene Cumston, M. D.,
Geneva, Switzerland.

This communication is based upon certain newly acquired data relating to icterus gravis, the result of the work of the French school. The onset of the icterogenous affection has been found to be much the same in all cases. The patients complain of being worn out, in a low state of resistance, and, upon getting wet or cold, being seized wtih chills, fever, and headache, followed by prostration. In considering the nature of the infection, typhoid and paratyphoid bacilli may be ruled out because hemocultures on bile remained sterile, and it is improbable that there was no type of spirochetosis present. In fact, most bacterial research has given negative results, because the usual failure of hemocultures made during the various forms of infectious icterus has been noted by the majority of observers. It would seem probable, therefore, that the presence of bacteria is not essential to the development of icterus during infectious processes.

If it is recalled how common the symptom of jaundice is when even no mild infectious process can be detected in the patient; if it is remembered that cases of unquestionably true icterus have been known to occur following the absorption of weakly toxic chemical substances, such as picric acid, one is led to believe that in infectious icterus gravis, as well as in benign jaundice, icterus, a common manifestation of functional disequilibrium of the hepatic cells, is in all probability the consequence of an action directly exercised on these cells by chemical substances, relatively little toxic, and that the pathogenesis of the various forms met with in practice can thus be conceived.

When a subject has absorbed some weak chemical substance, say picric acid, it is this substance that directly acts on the hepatic cells, not to cause lesions as I shall show further on, but by provoking an icterogenous disequilibrium. When a subject presents a benign icterus without the slightest rise of temperature, the condition is due to autotoxins, perhaps elaborated in larger quantity and rendered more potent from the state of fatigue and malnutrition, which constitutes the icterogenous chemical substance. When a subject presents an icterus with a marked gastrointestinal morbid state, in all probability it is consequent upon the bacterial toxins elaborated in the intestine and carried directly to the liver, the latter representing in these circumstances an icterogenous irritant. Finally, when a subject presents an icterus in the midst of a serious infectious symptomatic complex, it is not to the microbe of this infection that the icterogenous effect should be attributed, even when it can be found in the liver, but to the irritating action of its toxins on the hepatic cells.

That there are bacteria whose toxins are more icterogenous than others is possible, even probable, and is denied by no observer that I know of; but to admit the icterogenous specificity of certain bacteria, as some have done, does not appear to fulfill the reality of the facts observed. In point of fact, the icterus depends far less upon the bacterium than upon the offensive power of its toxins on the hepatic cells, on the one hand, and the sensibility of these cells on the other, because far from being a manifestation of suspended hepatic functions the icterus is, on the contrary, an index of a vigorous defensive reaction of the liver, and is merely an ordinary symptom of irritation and functional hyperactivity of the gland. Consequently, if icterus develops during the evolution of any kind of infection, or in the midst of apparent good health, it is not a lesion of the liver or hepatic insufficiency that is at work, but probably hepatic hyperactivity. If an icterus develops during a clinically serious infection, it is not because there is failure of the liver functions, but rather because the organ is preparing a defense against the aggression of the toxins by means of an intense functional reaction, indicating its defensive power. And if the subject dies during a serious infectious process with icterus, it is not from the liver that death results. The true cause of death will be made evident if the histological renal lesions are compared with those of the liver.

These statements are founded upon urological, clinical, and histological data. To go into the details of the urological data would take too much space, so I shall confine my remarks to the methods employed by Hélouin to determine the daily amount of urea, chlorides, phosphates, and acids eliminated, combined with a systematic search for indican and acetone and a frequent estimate of the blood content in urea, which invariably cause the same result, namely, that the elimination of urea in infectious icterus gravis, far from corresponding to a functional insufficiency of the liver, corresponded to a hyperactivity of the organ, a hyperactivity that cannot be better estimated than by the increase of urea.

This increase of urea thrown by the liver into the general circulation is constant and is made evident by a parallel increase of urinary urea as long as the renal permeability remains sufficient. But from the day that the renal permeability is no longer sufficient for eliminating urea as fast as it is thrown into the blood stream, azotemia develops. Therefore, the latter has nothing to do with the production of icterus. On the other hand, it seems possible to admit that the urinary hyperazotemia is dependent upon a preexisting azotemia. So long as the kidney is not involved in its permeability to urea, the percentage of azotemia remains normal and, nevertheless, the increase of the urinary urea is no less notable, regular and continued. Consequently, azotemia only appears at the time that the kidney has become insufficient for eliminating urea as fast as it enters the general circulation.

The clinical data are not less conclusive. In all infectious states with icterus, if by abstraction you remove the icterus, what remains if not the uremic syndrome of infectious azotemic nephritides? Epistaxis, blood suffusions, visceral hemorrhage, vomiting, meningoencephalic disturbances, hypotension, and hypothermy, there is not one of these symptoms among them all which does not belong to the clinical picture of the uremias. Unquestionably, the hemorrhagic accidents are more frequent during simple azotemic nephritides, but why should they be connected with an hepatic lesion which is often wanting, rather than to marked blood changes which accompany icterus?

As to the histological data they corroborate the others in a most striking way. In the first place, Ramond, Géraudel, and Sacquepée have referred to the possibility of a clinical syndrome of icterus gravis with trifling hepatic lesions. Widal and Abrami have shown how much serious functional disturbances of the liver may be quite independent from the anatomical state of the organ, while Bruhl, Moreau, Oettinger and Marie have reported cases of icterus gravis where there was an almost total absence of hepatic lesions. More recently, in a case of lethal infectious icterus arising in a patient with gas gangrene of the thigh, Fiessinger and Vigues made a histological examination of the liver, and this is what they found: The hepatic cells were little changed, the cytoplasm was very distinctly granular, but the nucleus was normal in size and structure. No change in the trabeculæ was found; only the cells in the centre of the lobule were loaded with pigment, and here the biliary capilliculæ were large, dilated, and distended by a deeply colored bile. The portal spaces were normal. The biliary vessels were not changed or dilated. In other words, the liver was histologically unchanged.

Merklen, not long since, published a series of cases of infectious icterus, some of which were examined histologically, and here are the results: Case I: Histologically the liver presented nothing in particular. Case II: Sections of the liver normal. Case III: Histological examination revealed complete integrity of the liver.

Amenille, Parisot and Tixier, in a remarkable paper on acute nephritides with icterus, have recorded a series of cases in every way similar to those recorded by Merklen and Hélouin. These observers apparently felt the need of expressing their surprise at their histologic findings, for in the opening sentences of their paper they say: "In our cases the icterus offered all the degrees of gravity and were associated with acute morbid changes in the kidney of such importance that they overshadowed the hepatic changes both from the viewpoint of clinical reaction and the anatomical lesion.

Now, in point of fact, here are the results of microscopic examinations made in the two fatal cases. In Case I the liver was about normal or at least it did not present gross lesions, but the writers state that the condition of the cadaver might have concealed minute cell lesions, as if they were afraid of being mistaken on account of this unforeseen result. In Case II histological examination showed a normal liver.

Finally, quite recently Pagniez and Scheikevitch have reported a fatal case of infectious icterus under the title of icterus with nephritis. They say: "The histological examination revealed some rather slight areas of fatty degeneration in the liver but no infectious nodules."

In spite of the evidence of histological integrity of the liver in relation to the gravity of the concomitant infectious state and the gross renal lesions, the idea of conceiving a fatal infectious icterus not related to and subordinate to serious hepatic lesions has undoubtedly appeared so paradoxical to all these observers that none of them, so far as I am aware, have been bold enough to view it in this light as Hélouin has done. Thus among others, Merklen, whose cases are particularly numerous and minutely observed, nevertheless persists in relating the hemorrhages, melena, epistaxis and other symptoms to suspended hepatic functions and looks upon infectious iterus as the expression of a massive hepatonephritis.

In a paper just published containing thirty-two cases and fifty-one pages of text, Merklen and Lioust have studied azotemia in infectious icterus. In this very interesting and extremely documented work these observers have presented a certain number of considerations in every way like those made by Hélouin, but there are also some differences which require discussion and apparently should be accepted under considerable reserve. Merklen and Lioust cannot admit, for instance, that the azotemia in icterus gravis is a purely renal symptom and regard it as a proof that the kidneys are involved. Although they do not regard the azotemia as a purely hepatic symptom, nevertheless in their opinion the liver plays a primordial part, and they add that azotemia without a determinate renal cause is known, as proved by Nobecourt's researches on azotemia in nurslings. These remarks reveal the difference between the pathogenic conceptions of icterus gravis of Merklen and Lioust and those of Hélouin.

Prepared by the urological and clinical results obtained in his researches, which extended over a period of fourteen months, Hélouin does not hesitate to reject absolutely the classical conception of icterus gravis which attributes to this morbid process a complete massive and rapid disorganization of the liver and which regards it as the most complete expression of hepatic insufficiency and he replaces it by the following: Infectious icterus gravis is the expression of a functional hyperactivity of a liver in the state of defense during the evolution of a serious toxic infection, serious in itself but yet more so on account of the concomitant nephritis and the renal insufficiency in the elimination of urea which is the consequence, and he is even inclined to go so far as to state that this process is an azotemic nephritis arising during an infectious state in which the liver is actively functionating.

This may, at first sight, appear to be a bold assertion, but if one goes over the reported cases of both benign and infectious icterus gravis and notes the meningeal reactions during the various forms of icterus, including icterus gravis without jaundice, because such cases have been observed, it is really surprising how everything becomes simplified and easily explained. From the case reports alluded to, it becomes evident upon careful reflection that the evolution of the morbid process represents the fluctuations of an azotemia, the decrease in the latter usually corresponding to a manifest clinical amelioration.

As to treatment, a milk diet should be absolutely proscribed when there is azotemia. Bleeding, purgatives and large enemata frequently repeated and even therapeutic rhachicentesis are, according to Hélouin, the most efficacious means for lowering the percentage of urea in the blood. Alcohol, physiological serum, with the addition of adrenaline or caffein, and injections of camphorated oil, are useful adjuvants.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, JANUARY 29, 1921.

EXAGGERATED EXERCISE

Many people do not sufficiently use their voluntary muscles, considering the amount of fuel they take in, and this doctrine has been so much spread abroad, especially by those who make their living or more by peddling some patent method of exercising that, even when not put in practice, it has become a matter of general belief that the more exercise one takes the better it will be for him. As an example, a graduate of a school of physical training, observing that her father, a brass moulder, was ailing, and that, at the same time, he preferred to rest after work, rather than to be busy about the house, advised him to mow the lawn and otherwise bestir his muscles. He did his best to follow her directions, but as his efforts did not seem to produce much benefit she finally sent him to a physician. This physician has been wondering ever since how the man ever walked from the trolley car to his office, for he was in the last stages of heart disease and, even with better care, died within a few months. Another case in which the teacher of gymnastics was a man, was otherwise similar, a relative in the last stages of heart disease being urged to take long walks.

A physician in a summer school was consulted by a young woman for the sensation of exhaustion. She was badly nourished and evidently overworked, yet, under the impression that she was doing just the thing to cause her to lay on fat and to become robust, she was taking a teachers' course in games, was playing basketball every day and walking a mile in the hot sun for good measure. She was much surprised to learn that she needed something other than exercise.

One of our large cities has recently taken the matter of physical culture somewhat to heart, having heard much mention of the subject of late, and proposes to introduce the work with a supervisor in charge. The school committee, when asked its notion of what they intended, replied, "We do not need health education but we want someone who can take off his coat and (two periods a week in a dusty room) show our boys how to exercise.' The medical member of the board had larger ideas but he was much in the minority. We have had schools of gymnastics for over a hundred years—will it take another hundred to develop something broader in the minds of educators than that exercise is everything?

The requisites for healthy living are few but essential, but among them exercise is but one and that not the most essential. It does not stand before rest, and the usefulness of both are dependent upon nutrition. The victim of heart disease is crippled in his means of getting nourishment to the body, the person who would become heavier must somehow store, not burn, more food. The child who does not exercise is suffering from a lack of the necessary energy. In establishing state departments of physical training we are in danger of failing to stress nutrition, although it is along this line of attack that those fearfully common conditions, carious teeth, adenoids, abnormal tonsils and, of course, underdevelopment, are to be successfully combatted. Lack of exercise means bad feeding, airing and housing—lack of that which makes for a fund of energy which will bubble (as it has bubbled in all healthy children in all lands in all times) in spontaneous play.

THE REDUCTION OF BLOOD PRESSURE IN ECLAMPSIA

High blood pressure in eclampsia is a dangerous complication and therefore it is of value to know the most effective and safest means for reducing it. At a meeting of the British Royal Society of Medicine held on December second last, Major C. A. F. Hingston read a paper on the subject in which he related his experience in the treatment of this condition at the Government Maternity Hospital, Madras. He stated that at this institution, two thousand women were confined and about thirty cases of eclampsia were seen every year. He was of the opinion that the blood pressure should be kept down to 120 mm. or less, not only in all cases of eclampsia, but in all cases of labor with premonitory symptoms of eclampsia. Moreover, he felt certain that the blood pressure rose after delivery in a certain number of patients who had shown symptoms of eclampsia up to the time of or during delivery, and in other cases where no signs or symptoms had manifested themselves before and during delivery. Consequently, he held the view that it was essential to watch all cases after delivery and to reduce blood pressure to 120 mm., whenever it rose above that after delivery.

As to the best and safest method of achieving this object. Hingston believed that the most effective mode, if the os was less than four fifths dilated, was to bleed the patient until the blood pressure fell to 120 mm.; when the os was four fifths dilated he recommended the reduction of the pressure by immediate delivery. If it rose after delivery venesection to reduce it should also be practised, and this procedure might have to be repeated two or three times. At the Madras Government Maternity Hospital, the largest gynecological and maternity clinic in the British Empire outside the British Isles, this method of reducing blood pressure had been practised during a period of three years. The cases thus treated yielded more satisfactory results than those obtained formerly when other methods were in vogue. The mortality was very small indeed, less than two per cent.; patients were seen and treated before severe lung complications set in.

According to Hingston more radical measures, such as accouchement forcé and Cæsarean section were not called for. These measures assuredly did reduce blood pressure but he yet upheld venesection. In the majority of cases this procedure stopped or lessened the frequency of the convulsions, lowered the blood pressure to 120 or less if required, prevented rises in temperature and serious lung complications. A considerable proportion of the patients became less drowsy and in some instances passed rapidly from a deeply comatose to a semiconscious condition and all were less irritable. It was likewise his practice to reduce the temperature if it rose above 100° F.

All those who took part in the discussion disagreed with Hingston as to the good effects of venesection. Mr. Aleck Bourne gave it as the result of his experience that expectant treatment with starvation, elimination and veratrone often obviated the need for Cæsarean section. Dr. M. Donaldson pointed out that there was probably a protective mechanism in these cases to keep the blood pressure high and thus help the kidneys to eliminate toxins and he doubted the wisdom of attempting to lower blood pressure. He believed in treatment by Cæsarean section. Dr. Gordon Luker agreed with Dr. Donaldson. The injection of saline after bleeding might sound paradoxical, but the latter washed out the poison and acted as a diuretic. The main object was to remove the poison and the best way to achieve this was by delivery of Cæsarean section, followed by saline.

Thus it would seem that British expert opinion is not in favor of venesection as a means of reducing blood pressure in eclampsia. Of course, venesection is lowering and repeated venesection reduces the amount of blood when it can be least spared. It is an important question and the opinions of some of our gynecologists with respect to the most sane and safe way of reducing blood pressure in eclampsia would be valuable.

THE NARCOTIC DRUG SITUATION

It is time the profession realized that the disposition in certain quarters to play up an exaggerated sentimental consideration for the victims of drug addiction has back of it a very definite motive. That motive deserves to be denounced as worthy only of contempt by reputable physicians. Maintenance of a drug habit has no longer any justifiable excuse, except in the case of patients suffering from malignant disease or other painful and incurable diseased conditions. Otherwise, since means of escape from its dominance are available, its continuance becomes positively vicious. Not in itself a disease, at most a functional disorder begotten of perverse habit, it deserves no softer name than vice, if, indeed, it be not a crime against society. The vast majority of its devotees belong to the most vicious and worthless element. They merit not coddling solicitude, but rather to be restrained in some correctional institution, for the sake of protection to the rest of society. Most of them are potential criminals, if deprived of other means of securing their drug. Many are in fact actual criminals.

Honest doubt as to the nature of the problem in its relation to the law, to the public generally, and to the victims of drug addiction, should be completely dispelled by study of the subject as presented in a paper published in the December number of the *Monthly Bulletin of the Department of Health* of the City of New York, by Arthur D. Greenfield. This masterly analysis is a most carefully prepared statement of facts and conditions, dealing with the subject from every angle with painstaking fidelity to the truth. Reference should be made to Doctor Thomas S. Blair's article in the NEW YORK MEDICAL JOURNAL of January 8, 1921, whose conclusions are based upon his practical experience (administrative) as Chief of Bureau of Drug Control, Pennsylvania

Department of Health, and are set forth in forceful and convincing manner. Her account of Experiences in Narcotic Drug Control, by Sara Graham-Mulhall, First Deputy Commissioner, State of New York Department of Narcotic Drug Control, in the New York Medical Journal, of January 15, 1921, emphasizes the utter futility of dilettante methods in attempting any easy solution of the problem.

The American Medical Association pronounced drug addiction a serious menace to society, because, if permitted to exist unchallenged, the canker will spread by contact and association, like the rotten apple in a barrel of sound ones until the whole barrelful is rotten. It is a nationwide, even an international problem. Its solution is predicated on two practical points of departure; first, rigid enforcement of the law, to prevent the spread of addiction; and second, provision of suitable institutions for the proper care, custody and treatment aimed at a complete cure of those addicted, who may be unable to care for themselves and are equally uncared for by relatives, at the public expense.

As regards law enforcement, every moral and practical assistance should be given both Federal and state authorities in their endeavors to enforce the Harrison Law and those state laws necessary to supplement and work in harmony with the Federal law. The burden of expense of this law enforcement ought not to be borne by physicians through a special license tax, since they derive no direct benefits from the law. That also is a matter for public expense.

Institutions for proper custodial care of addicts should be developed in the several states under the most careful supervision of medical men of the highest character. Of those proposed, the colony plan of industrial training school seems by far the most practical, since classification and segregation of the criminal, defective and immoral types, from the casual, the youthful and the otherwise normal may be applied, and the saving therapy of industry can then be fitted to each separate case. Those worth saving to society can thus be cured. Many would relapse when released from custody, if able to secure the drug. Some perhaps never will be cured; but these then must remain in custody indefinitely. A very small number perhaps should not be taken off the drug at all, by reason of some complicating and incurable disease. Relatively, the number requiring such institutional care as long as they live, must be very small. Temporary institutional treatment for the majority to be received would extend, probably, not more than one or two years. Every humane consideration demands that the state shall attempt to save, as well as to punish. The proper medical treatment must support and be supported by the punitive or correctional treatment. Such solution of the problem, it may be safely predicted, will prove less expensive to the state eventually, than to permit a continuance of present intolerable conditions.

Adjustment of state laws should be made so as to obtain complete cooperation of the Federal and state officials in their enforcement. Uniform state laws in the several states should supplement the Harrison law by providing that prescribing and dispensing of narcotic drugs to addicts be prohibited, with severe penalties for any violation. Through their enforcement, at one stroke, we should be done with any need for regulation by expensive commissions, with their burdensome red tape and meticulous interference with conscientious physicians in their legitimate use of narcotics. No limitation should be imposed on the discretion of a duly licensed physician in the legitimate employment of drugs vitally essential for the treatment of disease, or to alleviate pain and suffering from surgical causes. Such careful discrimination between their abuse and the legitimate use of narcotics is embodied in the provisions of the Harrison law. Other regulations imposed by subordinate authority have sometimes proved pernicious, often onerous and obstructive to the many engaged in legitimate work, while they were aimed only to catch a few crooks. Uniform state laws, thus enacted and enforced, would remove our most troublesome source of supply of narcotic drugs to the addict underworld. There would then remain the comparatively simple police problem, for both Federal and state officers, to prevent the smuggling of drugs across international boundaries, and between states, and to block fictitious jobbers in the wholesale trade, and the underworld traffic in city slums. These are the addict's sources of supply. Since the essential control of this supply is provided, there should thus be no further need for legislation than herein outlined.

PHYSICIAN AUTHORS: GEORGE F. BUTLER

Although he is known to his medical colleagues chiefly through his textbooks and numerous articles on the practical side of the medical science, Dr. George Frank Butler, of Chicago, also has a wide reputation outside the profession as a poet, essayist and story writer of uncommon excellence. This he has gained by means of three volumes of poems, two of essays and one book of fiction, *The Exploits of a Physician-Detective*. The writing of these was done in leisure hours. Authorship has been but an episode in his life, and it was only at the end of a long day of medical practise and study that Butler permitted imagination and fancy to have their play. Although his output has been slender, it shows that, had he so elected, he might easily have made a career for himself in general literature.

Butler's poetry consists chiefly of sonnets, and in the writing of these he is an exquisite craftsman, scrupulously accurate in form and adroit in thematic judgment. The first volume, *Sonnets of the Heart,* appeared in 1909, and was followed by *Echoes of Petrarch* in 1912 and *Travail of a Soul* in 1914. Stanley Waterloo, the novelist and critic, writing of the sonnets, says: "It is difficult to say too much in praise either of their technical beauty or of their appeal to the imagination and feelings. They have the touch of one who himself must feel, and who has the rare gift of putting his tender fancies into words with no loss of all their dreaminess and delicacy. Passionate at times, but always with a flowerlike purity, the sonnets are a revelation of what may be accomplished in picturing the deepest and finest of emotions. They are more than an exhibition of clever workmanship, because they have heart and imagination in them."

In his poetry, as in all his other literary work, Butler displays a large and inclusive optimism and human sympathy, and the stamp of good sense and sincerity ever is apparent. At times he is paganistic, but never decadent and never mischievously voluptuous. His essays have been described as condensed lay sermons, crystal clear in their purity of expression and filled with thoughts that are both inspiring and helpful. Elbert Hubbard, of *Philistine* fame, said that he always found in them "many wellexpressed truths which I wish I had expressed myself first." The late William Marion Reedy, the acute critic of the St. Louis *Mirror,* who aided so many Middle West writers to achieve fame, said Butler's essays "are scholarly written, but free from pedantic affectations. They are wrought in limpid, exquisite prose, and may be recommended to people who can appreciate good, thoughtful reading." Dr. Butler's first book of essays, *Love and Its Affinities,* was published in 1890, and is semiscientific in context. The second, *The Isle of Content,* was published in 1902. Opie Read, the novelist of Southern mountain life, called it "a notable contribution to our literature." In *The Exploits of a Physician-Detective,* published in 1907, Dr. Butler entered a new literary field. It was his first and only sortie into the domain of fiction, and consisted of a collection of twelve short stores, the motif of which was to demonstrate the unreliability of circumstantial evidence. The stories were well received, but rather than write more, Dr. Butler preferred to devote what little time he had to spare to the writing of poetry and essays.

Butler's medical writings have been somewhat more extensive than his works in general literature. They began with a textbook on *Materia Medica, Therapeutics and Pharmacology,* published in Philadelphia in 1896, which has gone through seven editions and was at one time used in seventy-two per cent. of the medical schools of the United States. For about fifteen years Dr. Butler edited the volume of therapeutics of the *Year Book* series. He has been and is an extensive contributor to various medical journals, and from 1900 to 1906 was editor and publisher of a magazine named *How to Live.* His medical advice to the laity has been syndicated in a large number of daily newspapers. His *Every Boy's Book* and *Every Girl's Book,* both published in 1912, presenting hygienic information for youths, have had a large sale. A forthcoming book by Dr. Butler which doubtless will be of great interest to the medical fraternity is *How the Mind Cures,* to be issued soon by a New York publisher. He is writing nothing at present except occasional contributions to the medical press, and working at odd moments on an autobiography.

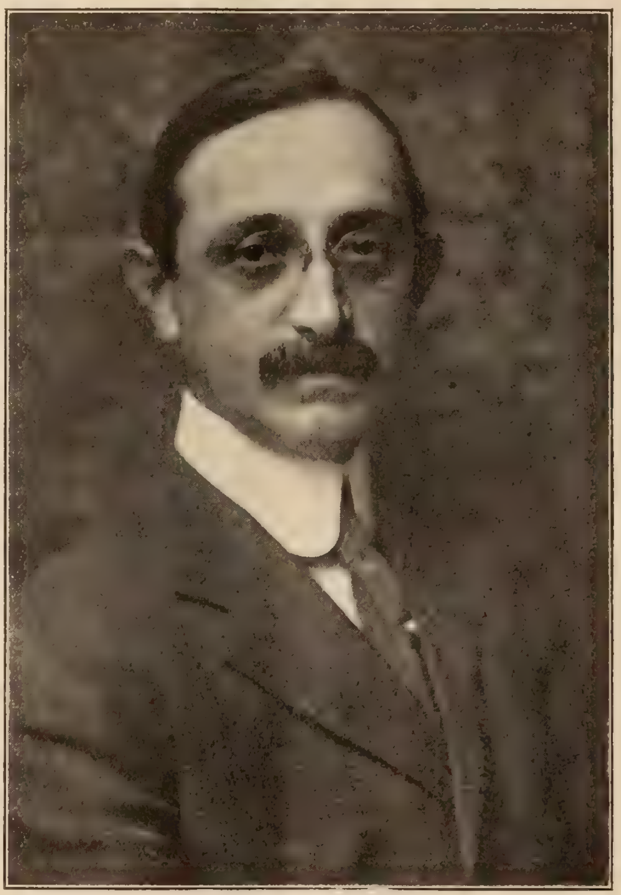
Butler was born at Moravia, N. Y., on March 15, 1857, and was graduated from Baldwin's Academy at Groton, N. Y., in 1874, after which he went to Pittsfield, Mass., where he spent four years as a pharmacist. It was there that the literary urge first came upon him. In a booklet describing a motor tour through northern New York and New England a few years ago, he says: "How well I remember coming to Pittsfield to live and clerk in a drug store when I was but seventeen years old! The most impressionable years of my life were spent there and in Berkshire county. The literary shrines of this region I have visited many times, and what taste I have for literature originated and was largely developed among the Berkshire Hills." Dr. Butler went from Pittsfield to southwestern Kansas, where he spent eight years in the sheep and drug business, after which he became a student at Rush Medical College, now the medical department of the University of Chicago, where he got his degree in 1889. He has practised in and around Chicago practically ever since. He has a wide reputation as a diagnostician. For twenty-eight years he was professor of materia medica, therapeutics, and clinical medicine in various Chicago medical colleges. Four years ago he resigned all school work and became director of the North Shore Health Resort, near Chicago. Valparaiso University, Indiana, conferred the honorary degree of M.A. on him in 1908. Dr. Butler is a member of the Chicago Academy of Medicine and other medical associations, and of the leading literary organizations of the Middle West metropolis.

Obituary.

GODFREY ROGER PISEK, M. D., Sc. D.,

of New York.

Dr. Pisek died suddenly from heart disease on January 19, 1921. He was born in the city of New York in 1873; he was graduated from the Academic Department of the New York University as Bachelor of Science in 1894, and from the Medical Department of the same university in 1897. He was visiting physician to the babies' wards of the New York Post-Graduate Hospital, Park Hospital, and St. Bartholomew's Hospital, and consulting pediatrist to Union Hospital, Port Chester, N. Y., Darrach Home for Children, and New Utrecht Hospital. He was a member of the New York Academy of Medicine, of the New York County Medical Society, American Medical Association, Society of the Alumni of Post-Graduate Hospital; president of the New York Post-Graduate Faculty Association, and Mutual Aid Society, and one of the founders and the first treasurer of the Alumni Association of the University and Bellevue Hospital Medical College. Dr. Pisek was active in social work and was the honorary president of the Lenox Hill Settlement and a director of the John Huss Neighborhood House. He was professor of diseases of children of the New York Post-Graduate Medical School and the University of Vermont. The latter conferred upon him the degree of Sc. D. in 1914. During the war he did valuable child welfare work.



Godfrey R Pisek

Dr. Pisek was a frequent contributor to the medical journals in his specialty and on public health topics in general. His principal work was a textbook on *Diseases of Children* as coauthor with Professor Chapin, the fourth edition of which appeared in 1919.

With the passing away of Dr. Pisek, the medical profession, the country at large, and the New York Post-Graduate Medical School lose one of the most eminent specialists in pediatrics. He was a most lovable man and companion, and a most sympathetic physician who knew the art of winning children's hearts and confidence. Dr. Pisek will be long remembered by his countless colleagues, friends and pupils, as well as by grateful parents whose children he restored to health.

On the afternoon of Tuesday, January 25th, an impressive memorial service in honor of Dr. Pisek was held at the New York Post-Graduate Medical School and Hospital. Dr. Ellice M. Alger presided. The Rev. Frederick E. Stockwell offered an inspiring prayer, after which Dr. James F. McKernon spoke briefly of the great loss the faculty had sustained by the death of Dr. Pisek, one of its most distinguished members. Dr. Frederic Brush, for many years superintendent of the Post-Graduate Medical School and Hospital, read an address on the life and brilliant career of Dr. Pisek, relating interesting incidents from the time Dr. Pisek was intern in the hospital up to the present day when he had achieved distinction at the head of the pediatric department of the New York Post-Graduate Medical School and Hospital. He closed his address by urging all to carry on the brilliant work in which Dr. Pisek was so deeply interested, and to which he gave his life.

S. ADOLPHUS KNOPF.

LOUIS JACOBS, M.D.,

of New York.

Dr. Louis Jacobs, of 118 West 118th Street, New York City, died suddenly on December 30, 1920, in his fortieth year. Dr. Jacobs graduated from the City College in 1901. He graduated in medicine from Columbia University in 1904. He held positions in the Trenton Emergency Hospital, Harlem Hospital, Lying-In Hospital, and Roosevelt Hospital. He became an intern at Mt. Sinai Hospital in 1905, graduating in 1908. On graduation from the hospital he became connected with the throat, nose and ear department of the dispensary of Mt. Sinai Hospital, and subsequently became chief of clinic in that department, which position he held at the time of his death, and he was also acting adjunct laryngologist to Mt. Sinai Hospital. He was adjunct visiting physician to the Montefiore Home and the Bedford Sanatorium. He was a member of the Academy of Medicine, of the Alumni of Mt. Sinai Hospital, of the Harlem, Metropolitan, and Hunterian Societies.

News Items.

Pittsburgh Orthopedic Club.—This society was organized recently with the following officers to serve for the first year: Dr. Stewart L. McCurdy, president; Dr. David Silver, vice-president; Dr. Eben W. Fiske, secretary.

Dr. Winslow Goes to Geneva.—Dr. C-E. A. Winslow, of Yale University, has been chosen by the League of Red Cross Societies to direct the public health work of the league in Europe. Dr. Winslow has been granted leave of absence for five months, beginning February 1st, when he takes up his new duties in Geneva.

Compulsory Vaccination Against Typhoid Fever Urged by French Physicians.—The compulsory inoculation against typhoid fever was recommended at a recent meeting of the French Academy of Medicine. A commission has been appointed to study the question, and if found desirable proposals will be laid before the public authorities.

New Courses in Anesthesia.—McGill University, Montreal, and the University of Pittsburgh, are offering a number of new courses for teaching the proper uses of anesthesia apparatus and appliances. The lectures and demonstrations at McGill are in the hands of Dr. Wesley Bournce, and at the University of Pittsburgh, Dr. J. R. McCurdy is in charge of the work.

Ordinance Requiring Vaccination Against Smallpox Upheld.—An ordinance of San Antonio, Tex., which provides that the city board of health may require the vaccination against smallpox of pupils, teachers, and school employees, has been held valid by the Court of Civil Appeals of Texas. The court decided that vaccination could be required even though no epidemic of smallpox existed.

Tuberculosis Death Rate Lowered.—According to statistics from the Federal Census Bureau and the New York State Department of Health, the death rate from tuberculosis in New York State, outside of New York city, fell from a rate of 145.3 in a thousand of population in 1900 to 98.0 in 1920. The total number of deaths from tuberculosis during the year 1900 was 5,572, and in 1920, 4,675.

Peking Union Medical College.—Dr. Henry S. Houghton has been appointed director of the Peking Union Medical College. He is a graduate of the Ohio State University and of the Johns Hopkins Medical School, has spent the greater part of the past fifteen years in China, where he has served as physician of the Wu Hu General Hospital, as dean and professor of tropical medicine of the Harvard Medical School of China in Shanghai,

Vital Statistics of New York.—During the week ending January 15, 1921, the total deaths from all causes in the city of New York numbered 1,396, corresponding to an annual death rate in a thousand of population of 11.60, compared with 1,461 deaths and a rate of 12.41 for the corresponding period in 1920. Of the five boroughs, Richmond had the highest rate, 20.88, while the lowest rate for the week, 10.73, was in Queens. In Manhattan the rate was 11.66, in Brooklyn 11.40, and in the Bronx, 11.15. During the week there were 1,429 marriages, 2,611 births, and 127 stillbirths.

West Philadelphia Medical Association.—Dr. D. Clinton Guthrie was elected president of this association, at its recent annual meeting, and other officers were elected as follows: Dr. Arthur E. Bogart, vice-president; treasurer, Dr. Edmund L. Graf; secretary, Dr. Henry G. Munson; directors for three years, Dr. Aaron L. Bishop, Dr. Harry G. Fish, Dr. Charles G. Steinmetz, Dr. H. B. Kobler, and, to fill an unexpired term, Dr. Charles E. Price.

French Birth Rate Increases.—Vital statistics show that the birth rate increased in France in 1920. At Marseilles, for the first time in years the number of births greatly exceeded the number of deaths. At Chalon-sur-Sâone the total of births for the year was 689 and that of deaths 520 only, whereas, the figures for 1919 had been, births 420 and deaths 571. In Toulon the number of births exceeded by 118 that of deaths, something that has not happened for thirty years. From Orléans satisfactory figures have also been communicated, and at Dieppe the number of births exceeded by thirty per cent. the number of deaths.

Bacteriologists Wanted by the Public Health Service.—The United States Civil Service Commission announces an examination for the following positions in the United States Public Health Service: Bacteriologist, $130 to $180 a month; associate bacteriologist, $90 to $130 a month; junior bacteriologist, $70 a month; junior bacteriologist, part time, $30 to $50 a month. On account of the needs of the service papers will be rated as received and certification made as required. In the absence of further notice applications will be received for these examinations by the commission at Washington until July 1, 1921. In the event of a sufficient number of eligible candidates being obtained before that date, due notice will be given.

◆

Died.

Ambrose.—In Legonier, Pa., on Tuesday, January 18th, Dr. J. T. Ambrose, aged eighty-four years.

Blanchard.—In Brookline, Mass., on Friday, January 14th, Dr. Benjamin Sawyer Blanchard, aged sixty-three years.

Buckley.—In York, Pa., on Thursday, January 13th, Dr. E. W. Buckley, aged sixty years.

Gentry.—In Uniontown, Pa., on Saturday, December 25th, Dr. Alan F. Gentry, aged fifty-one years.

Hutchinson.—In Los Angeles, Cal., on Friday, January 7th, Dr. G. L. Hutchinson, aged sixty-one years.

Kellogg.—In Avon, Conn., on Saturday, January 15th, Dr. Edward W. Kellogg, aged eighty years.

Knight.—In New York City, on Sunday, January 16th, Dr. Eva Helen Knight, aged sixty-six years.

Mendenhall.—In San Diego, Cal., on Wednesday, January 5th, Dr. A. L. Mendenhall.

O'Sullivan.—In New York City, on Thursday, January 20th, Dr. William J. O'Sullivan, aged sixty-two years.

Pisek.—In New York City, on Wednesday, January 19th, Dr. Godfrey Roger Pisek, aged fifty years.

Roberts.—In Herkimer, N. Y., on Saturday, January 15th, Dr. H. Morton Roberts, aged fifty-nine years.

Washington.—In Red Star, W. Va., on Friday, January 14th, Dr. S. A. Washington.

Weller.—In Summerhill, Pa., on Wednesday, January 12th, Dr. V. B. Weller, of Delaware, Ohio, aged forty-two years.

Book Reviews

FRENCH MEDICAL BOOKS OF 1920.

Le Diabète sucré. By Dr. Marcel Labbé, Professor at the Faculty of Medicine at Paris. With Eight Figures. Paris: Masson et Cie., 1920. Pp. 376.

Consultaire. By Dr. Maurice Ségard. Paris: A. Maloine et Fils, 1920. Pp. 516.

Traité pratique de pathologie exotique. Published under the direction of Dr. Charles Grall and Dr. A. Clarac. One Hundred and Thirty-one Illustrations. Vol. IV. Paris: J. B. Baillière et Fils, 1920. Pp. 766.

L'Infection bacillaire et la tuberculose chez l'homme et chez les animaux. By Professor A. Calmette. With Thirty-one Figures and Twenty-five Full Page Plates. Paris: Masson et Cie., 1920. Pp. 619.

Traité de l'immunité dans les maladies infectieuses. By Professor Jules Bordet. Paris: Masson et Cie., 1920. Pp. 720.

Physiologie normale et pathologique des Reins. By L. Ambard. Second Edition. Completely Brought Up to Date. Forty-five Figures and Two Full Page Plates. Paris: Masson et Cie., 1920. Pp. 368.

Travaux annuels de l'Hôpital d'Urologie. Published under the Direction of Dr. F. Cathelin. First Series. Profusely Illustrated. Paris: J. B. Baillière et Fils, 1919. Pp. 397.

Nouveau traité de médecine. Edited by Professor G. H. Roger, Professor F. Widal, and Professor P. I. Teissier. Part I: Infectious Diseases. Forty-five Figures and Three Colored Plates. Paris: Masson et Cie., 1920. Pp. 482.

Chirurgie, reparatrice et orthopedique. Edited by Jeanbrau, Nové, Josserand, and Ombrédanne. Volume I, Five Hundred and Eighteen Illustrations; Volume II, Five Hundred and Eighteen Illustrations. Paris: Masson et Cie., 1920. Pp. 659 and 656.

Traité de pathologie médicale et de therapeutique appliquét. Edited by Sergent, Ribadeau, Dumas, and Babonneix. Paris: A. Maloine et Fils, 1920.

Traité pratique et sérologie et de sérodiagnostic. By M. Rubinstein. Twenty-two Illustrations and Two Colored Plates. Paris: A. Maloine et Fils, 1921. Pp. 414.

Précis d'urologie. By Professor Legueu and Dr. E. Papin. Four Hundred and Seventy-nine Illustrations. Paris: A. Maloine et Fils, 1921. Pp. 709.

With the close of the year 1920 it may be well to refer to those French works on medicine and surgery that have appeared during the last six months of the year which are worthy of note.

* * *

Labbé's work on diabetes is the fruit of long experience and research, and is attractive in literary style and full of new ideas. It is a contribution to our knowledge of diabetes mellitus, considered from all points of view, and is easily the best work on the subject that has appeared. Among the subjects treated we would call especial attention to the following: The painful syndromes of diabetes, diabetes and tuberculosis, surgery and diabetes, pancreatic lesions in diabetes, the treatment of diabetes with and without denutrition, the curable acidoses of diabetics, the treatment of acidosis and diabetic coma, not to mention many other highly interesting problems discussed by the author.

* * *

Dr. Maurice Ségard's book, *Consultaire,* contains one hundred consultations on diseases current in daily practice. The diseases are arranged in alphabetical order; for example, under letter B are: Blepharitis, bronchitis (chronic), bronchopneumonia and rubeola, burns. The volume ends with a complete table on thermal and climatological resorts, arranged according to disease, and a complete one on infantile posology. As a ready reference book for the busy practitioner this volume can be unhesitatingly commended. We know of nothing like it in English.

* * *

The first three volumes of this very complete work by Grall and Clarac on the pathology and disease of tropical origin appeared before the war. The present volume treats of diarrheas, dysenteries, endemic hepatitis, and abscess of the liver, by such competent observers as Grall, Léger, and Mathis. To enter into an analysis of the vast amount of matter contained in the pages of this book is out of the question, but it may be said that it represents the most complete and recent exposition of the subjects dealt with. It will be found invaluable, especially for army and navy medical men, and to those who come in contact with tropical disease.

* * *

To scientists throughout the world the name of Calmette is a household word. The present volume is superb, to say the least. The entire subject of tuberculous infection and tuberculosis in man and animals is exhaustively treated by a worker whose scientific attainments are second to none, and especially in the study of tuberculosis. The vast amount of matter treated, and the clear and concise way in which the author deals with the subject, make the volume interesting reading from beginning to end, and when the last page is reached the reader regrets that the book is at its close. To the teacher, practical physician, and scientific worker, this book will be invaluable.

* * *

Like Calmette, the name of Prof. Bordet needs no introduction to the medical world, and, like Calmette's work just mentioned, the present volume requires no comment, only praise and admiration. The subjects treated are as follows: Infection, natural immunity, acquired immunity, the comparative characters of various immunities, obstacles to immunization, and general signification of the principal phenomena of immunity. These subjects compose the first part of the volume. The second part deals with cell immunity in all its aspects, while the third treats of humoral immunity—the properties of animal sera, the alexin and its fixation, the antigen, antibody, the antibody antigen reaction, specificity, anaphylaxis and blood ferments. The fourth and last part of the volume deals with the reaction of the organism and immunity.

* * *

The first edition of Ambard's *Normal and Pathological Physiology of the Kidneys* was an epoch making one, and the second edition now before us can be said to be the same. Although all urologists do not entirely accept Ambard's theories, nevertheless they are worthy of the highest consideration, and it is to be pointed out that no lesser men than I. Addis, C. K. Watanabe, Clairveaux and Chabanier have, since the first edition appeared, confirmed and enlarged Ambard's conclusions. This book cannot be devoid of interest to all engaged in urological work.

Although this monumental volume, covering a year's work in urology by Cathelin, bears the date of 1919, it did not issue from the press until late in 1920, hence its mention at this time. Cathelin is certainly to be congratulated upon this first collection of papers produced by the school of the Hôpital d'Urologie, the importance of which from first to last cannot be overestimated. Among the papers, those of particular interest are: The pathology of the renal papillæ, by Grandjean; surgical polycystic kidney, by Frigaux; tumors of the testicle, by Brulé; modern nephropexy, by Bucquet, and last but far from least, an unusually remarkable paper by the regretted Infroit, entitled: Pelvic spots and their radiographic interpretation.

* * *

All the large French systems of medicine had become out of print, and with the great advances made since 1914 a new and authoritative system has been deemed desirable. The intention of the distinguished editors—Roger, Widal, and Teissier—of this new system is to describe such new methods of examination as can be practised by the physician—not the highly trained specialist—and how to interpret the results. Treatment, prophylaxis and hygiene have not been neglected, and are to be given adequate place in the forthcoming volumes of which there will be twenty-one in all. Part first, now before us, deals with infectious diseases, the different chapters being contributed by such men as Prof. Roger, Macaigne, Dopter, Veillon, and others, which are enough to show the high standard of the work. This volume is beautifully printed, illustrated and bound with the usual good taste shown by the publishers.

* * *

This work on surgical repair and orthopedics, edited by Jeanbrau, is intended for civil practice, especially the treatment of liability accidents. The matter composing the two volumes is largely derived from surgical experience of the war, and can now be applied to daily practice. The technic of surgery of repair, and rules governing the construction of prostheses, compose the first volume. The second volume is devoted to the regional surgery of the head, neck, thorax, spine, and abdomen. As a very complete work of reference on the subject we can recommend it.

* * *

This very practical system of medicine, edited by Sergent, Ribadeau, Dumas, and Babonneix, will be complete in thirty-eight parts. The parts which have appeared up to the middle of December treat the following subjects: Deontology and medical jurisprudence, parasitic infections, infections of unknown germs, radiology including radio and radium therapy and diagnosis, liver and pancreas, and the first volume on psychiatry—the subject will be completed in two volumes. The forty or more contributors to this system are all men well known in the medical world. Space prevents us from giving a detailed analysis of the six parts that have so far appeared, but if one can correctly judge of the work from these there is no question but that the system will fulfill a real want, namely, a condensed system of medicine in every respect up to date, and especially suited for the needs of the physician desirous of keeping abreast with the times.

Rubinstein's book is the outcome of long work and experience. The writer reviews the biochemical properties of the sera, and laboratory methods pertaining to the latter. The second and most important part of the book is practical, dealing with the serodiagnosis of syphilis, tuberculosis, echinococcosis, cancer, etc., no technical detail being neglected. Abderhalden's reaction with details of the technic is fully exposed, while the fermentative properties of serum and problems pertaining to it compose the final chapters of this excellent monograph.

* * *

The arrangement of this new textbook by Legueu and Papin on the important subject of urology is original and practical. Methods of examination and diagnosis occupy nearly half of the book, while the special pathology is presented as concisely as is consistent with thoroughness. The illustrations are excellent and suggestive, being due to the talented pencil of Dr. Papin. The book naturally reflects the teachings of the Necker school and the daily practice at the Guyon clinic. It has seemed to us that for teachers of urology this textbook would be of extreme value in the preparation of lectures, while for the student it is no less admirable.

* * *

A number of other volumes have appeared from the French press during the year, although time and space forbid their review, but in closing I would mention the *Traité des Maladies Vêneriennes,* by D. F. Balzer, published by Baillière et Fils, as well as a new monograph on surgical anatomy by Dr. R. Grégoire, entitled: *Anatomie Medico-Chirurgicale de la Région Thoracos-Abdominale,* also published by Baillière et Fils. Balzer's book is a very complete and judicious treatise on syphilis and the venereal diseases, while for the operating surgeon Grégoire's monograph will be found of inestimable value, not only for the originality of the text but for the seventy-one plates illustrating surgical anatomy and operative acts in the region dealt with.

SOCIAL DISEASES.

The Social Diseases: Tuberculosis, Syphilis, Alcoholism, Sterility. By Dr. J. Hericourt. Translated, and with a Final Chapter, by Bernard Miall. London: George Routledge & Sons, Ltd.; New York: E. P. Dutton & Co., 1920. Pp. viii-246.

A most ambitious book by a most ambitious writer. As one reads on and sees how the author is going to save the world from tuberculosis, from syphilis, from alcoholism, from sterility, and from everything but the author himself, one stops to think of the high cost of paper. So much good paper wasted, so many valuable minutes wasted by the reader, in an effort to follow the vacuous train of thought, ever nursing the fond hope that perhaps the author will finally say something of import. Vain hope! This modern Don Quixote, applauded and appended in a final chapter by Bernard Miall, is poorly armed for the combat he has undertaken. He confesses, or rather both authors confess, their bravery. In spots the venom and hatred shown would cause a worker like Cannon to fear an exhaustion of the adrenals. In spots again a paranoid type of argument is advanced. An excellent study of psychosis rather than an effective effort at reform.

INDUSTRIAL COLONIES FOR THE TUBERCULOUS.

Industrial Colonies and Village Settlements for the Consumptive. By Sir German Woodhead, K. B. E., V. D., M. A., M. D., LL.D., Professor of Pathology in the University of Cambridge; Fellow of Trinity Hall; Assistant Commissioner on Tuberculosis (1895-1896), etc, and P. C. Varrier-Jones, M. A., M. R. C. S., L. R. C. P. (Lond.), Foundation Scholar, St. John's College, Cambridge; Honorary Medical Officer, Cambridge Tuberculosis Colony; Tuberculosis Officer for the County of Cambridge, etc. With Preface by Sir Clifford Allbutt, K. C. B., M. A., M. D., LL.D., D. Sc., F. R. C. P., F. R. S., Regius Professor of Physic in the University of Cambridge. Cambridge: At the University Press, 1920. Pp. ix-151.

Little by little the sanatorium idea has grown, but experience has shown it is not doing all that is necessary for the sick man. He cannot stay there always—he would not if he could—and to return him to his home incapable of earning a full wage and as a source of infection is entirely unsatisfactory. Moreover, he has come to think his case is one which requires a life of ease, and cannot pull himself together to do what work he can. The work done in the sanatorium was not the kind he could find when he came out. He could only do fifty per cent. of the full day's work, and, naturally, a scale of payment was difficult and the men objected to having tuberculous men in the factory or store.

The Cambridgeshire aftercare scheme has been inaugurated in connection with the large Papworth Colony in England, and enables a man to resume his former occupation gradually, under conditions as nearly ideal as possible. It is composed mainly of representatives of the various Friendly Societies operating in the county, and is essentially a democratic affair. Grants are made on the recommendation of the tuberculous medical officer equalling the sickness benefit, and is continued until a man has grown used to working full time and reaccustomed to his surroundings. The Ministry of Pensions is adopting the idea of subsidizing the labor of the tuberculous soldier.

By itself, as a means of permanently restoring the patient to health, sanatorium treatment is a failure. Aftercare is designed to assist a man in the continual struggle for fresh air, rest, and good food. We are justified in doing the best we can for tuberculous soldiers by prolonging their lives and protecting their families. Sympathy and help can never repay the sacrifice made by the man who is wounded by an invisible foe. These are not lacking, but there is a want of courage, a lack of initiative, of imagination, and what appears to be a hopeless problem drifts on from month to month, from year to year. Are we then to extend the treatment and help for a lifetime? As far as our present knowledge goes, the answer must be "yes." Men who have proved they cannot return to the old hours of work in the same surroundings, can easily do four or six hours at the colony, and with the pension are kept well away from the poverty line. Such a man's family is part of the community, and the pension is not a dear price to pay for the protection of the man's fellow workmen and his fellow travelers in train and tram and bus. A tuberculous colony is a community of consumptives in which hygienic and economic factors have been adjusted to suit the abnormal, physical and mental state of its members, an industrial section where the treatment may be prolonged and training in a suitable occupation begun, where the man will not be bored with purposeless exercise and almost unlimited leisure. The dismal records of men who have broken down after six months' work. The bitter feeling that they are not "early" enough for a sanatorium, not "late" enough for a home for the dying! No healthy working man can understand his condition, the difference between incapacity for work and mere shirking, so the instructors in a colony should be expatients. But the whole organization is watched over by a healthy person, who has to see that the factors which in the ordinary commercial world are against the health of the worker are eliminated. The ordinary labor market is competed with, but there is no undercutting.

The chief note in the book is hope—not of curing the disease, but of arresting it. With the hospital at one end, the village settlement at the other, the intermediate rest houses, open air shelters, hostels and workshops, a patient gradually gains selfconfidence. He is no longer a valetudinarian but a useful member of society.

Remember, the system has been tried out and the men who write speak from experience, but they welcome any new idea. The book ought to be in the hands of every man who has to do with the wise segregation and employment of those melancholy men who are not sure of a welcome anywhere.

EREWHON REVISITED.

Erewhon Revisited Twenty Years Later. Both by the Original Discoverer of the Country and by His Son. By Samuel Butler, Author of *Erewhon, The Way of All Flesh, Life and Habit,* etc. With an Introduction by Moreby Acklom. Illustrated. New York: E. P. Dutton & Co. Pp. xxvii-304.

There was once a book published in London about the underworld which was condemned by the Church and old ladies of both sexes, though its object was to do good. An enterprising street bookseller bought up a large quantity of "publisher's remains" and stuck a label over his truck: "A Book Not Fit to Read." He had a good sale. Longmans refused to print *Erewhon Revisited,* for fear of offending their High Church patrons, but Bernard Shaw induced Grant Richards not only to print but to bear the entire financial risk. Doubtless the refusal helped the sale, although the book provoked much hostile criticism. Butler once said that a large number of professing Christians are really only worshippers of Mrs. Grundy. Humbug he detested fiercely. When *Erewhon* appeared anonymously in 1872, it at once attracted attention by its clever satire and imagination. It was translated into Dutch and German. When its authorship was disclosed its sale fell 90 per cent., though *Erewhon Revisited,* published in 1901, a satirical commentary in story form not so much on the beliefs of late Victorian times as an attack on Christian dogma, it had a successful sale, and here we see it again in 1920. There is plenty of humor in the book, particularly for those who recognize the type. Dr. Downie, for instance, who "could say nothing in more words than any man of his generation," also Hanky and Panky, professors of Worldly and of Unworldly Wisdom. There is also the Fairmead

Deformatory (Reformatory) and the fashionable Boarding School.

It would be interesting to find the reasons for heterodoxy in the sons of severely orthodox fathers who tried so hard to be just and affectionate to their children. Butler, Gosse, Benson, and a few others are noticeable, even the saintly Wesley. There always seems a lurking obligation in the children to justify their attitude toward religion, not always satirically, sometimes sadly. The fierce atheism, the cold rejection, are rarely met with now, perhaps because the church itself rather ignores those points over which the majority no longer argue strongly:

> The millions suffer still and grieve,
>   And what can helpers heal,
> With old world cures men half believe
>   For woes they wholly feel?

The followers of Butler and his school, standing exultant over the ruins of the miraculous in theology, call out:

> Ye varying sects, who all declare:
> Lo! Christ is here, or Christ is there,
> Your stronger proofs divinely give,
> And shew us how the Christians live.

and it was to expose such inconsistencies that Butler went over the mountains again to Erewhon.

It was a custom in Erewhon, when he first went there, to punish ill health as a crime, while those who committed what are called crimes were relegated to hospitals. The trial of a man guilty of suffering from pulmonary consumption is given, of which Butler took the judges' summing up from a report of a man tried for theft. Silence concerning this custom in *Erewhon Revisited* seems to imply that the habit was not a success, but it may be tried again in other parts, as the world is feverishly ready to adopt anything eccentric.

A TWO-DECKER.

The Hyphen. By Lida C. Schem. New York: E. P. Dutton & Co., 1920.

In these days when everyone is doing his best to untangle the knots growing out of an unlimited indulgence of racial prejudices it is somewhat appalling to be brought face to face with a two volume novel of what seem thousands of pages, of a scope that includes almost everything in the world, and of a truly German thoroughness in the presentation of detail, dealing with the German in America. True, the German-American is still here and probably much the same as Miss Schem describes, but there are other things so much more important.

Anyone who asks a reader to wade through a mass of writing like *The Hyphen* must have either an absorbing story to tell or something of very great import to relate. Miss Schem attempts to have both and does not succeed in either. Her story deals with the life in a Jersey suburb of New York of Guido Hauser, ostensibly the son of a well to do Jersey merchant. And under this guise, she brings in almost everything that anyone could possibly wish to discuss in a whole shelf of novels, tracts, and textbooks. The question of Guido's religion brings in a detailed consideration of religion versus agnosticism and Catholicism versus Protestantism. There are endless debates upon republican versus monarchical government, upon patriotism, upon sex, and even upon Socialism. To complicate the threads of the narrative, which doubtless seemed to the author too simple, she makes Guido not the son of his supposed parents but of a distant and spectacular couple whose adventures in a Russian prison and other parts of the Continent fill many pages before Guido is even introduced onto the scene.

The book has its chief value as a presentation of a contemporary type, the German-American, and its variations, but one fears it will prove of more value to historians than to readers of fiction.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

REPORT OF THE SURGEON GENERAL, U. S. ARMY, TO THE SECRETARY OF WAR, 1920. Washington: Government Printing Office, 1920. Pp. 755.

MASTERPIECES OF MYSTERY. Detective Stories. Edited by Joseph Lewis French. Garden City and New York: Doubleday, Page & Co., 1920. Pp. 273.

MASTERPIECES OF MYSTERY. Ghost Stories. Edited by Joseph Lewis French. Garden City and New York: Doubleday, Page & Co., 1920. Pp. 273.

MASTERPIECES OF MYSTERY. Mystic Humorous Stories. Edited by Joseph Lewis French. Garden City and New York: Doubleday, Page & Co., 1920. Pp. 265.

THE CORDS OF VANITY. A Comedy of Shirking. By James Branch Cabell. With an Introduction by Wilson Follett. New York: Robert M. McBride & Co., 1920. Pp. xiv-330.

ESSENTIALS OF TROPICAL MEDICINE. By Walter E. Masters, M. D. (Brux.), M. R. C. S., L. R. C. P. (Lond.), Graduate of the London School of Tropical Medicine; Fellow of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Geographical Society. New York: William Wood & Co., 1920. Pp. vi-702.

PENNSYLVANIA HOSPITAL. *Annual Report, Department for Mental and Nervous Diseases, West Philadelphia, for the Year Ending Second Month Twenty-ninth, Nineteen Hundred and Twenty.* Presented to the One Hundred and Sixty-ninth Annual Meeting of the Contributors to the Pennsylvania Hospital. Philadelphia, 1920. Pp. 50.

JOHAN BOJER: THE MAN AND HIS WORKS. By Carl Gad. Translated from the Norwegian by Elizabeth Jelliffe Macintire. With an Introduction by Llewellyn Jones and Critiques by John Galsworthy, Joseph Hergesheimer, James Branch Cabell, and Cecil Roberts. New York: Moffat, Yard & Co., 1920. Pp. 260.

A LABORATORY MANUAL OF ORGANIC CHEMISTRY FOR MEDICAL STUDENTS. By Matthew Steel, Ph. D., Professor of Organic and Biological Chemistry, the Long Island College Hospital, Brooklyn, N. Y. Second Edition, Revised and Enlarged. New York: John Wiley & Sons, Inc., 1920. London: Chapman & Hall, Limited, 1920. Pp. xi-284.

THE DIFFICULTIES AND EMERGENCIES OF OBSTETRICAL PRACTICE. By Comyns Berkeley, M. B., M. D., M. C. (Cantab.), F. R. C. P. (Lond.), M. R. C. S. (Eng.), Obstetric and Gynecological Surgeon to the Middlesex Hospital; Surgeon to In Patients, Chelsea Hospital for Women; Senior Obstetric Surgeon, City of London Lying In Hospital, etc., and Victor Bonney, M. S., M. D., B. Bc. (Lond.), F. R. C. S. (Eng.), M. R. C. P. (Lond.), Assistant Obstetric and Gynecological Surgeon of the Middlesex Hospital; Lecturer on Practical Obstetrics, Middlesex Hospital Medical School; Surgeon to the Chelsea Hospital for Women, The Freemasons Hospital, etc. Third Edition. With Three Hundred and Nine Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xii-809.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

---

A Clinical Study of Wassermann-fast Syphilis, with Special Reference to Prognosis and Treatment.—John H. Stokes and George J. Busman (*American Journal of the Medical Sciences,* November, 1920) thus summarize their paper:

1. Of 458 syphilitic patients who had received from twelve to twenty-nine arsphenamine injections combined with mercurial inunctions, the average being fourteen injections and ninety inunctions in eleven months, 6.6 per cent. of primary and secondary cases, and twenty-two per cent. of latent, late and hereditary cases (average duration thirteen years) remained persistently Wassermann positive.

2. Cardiovascular changes are apparently those most likely to underlie a resistant positive Wassermann test in late syphilis (forty-four per cent.), with neurosyphilis thirty per cent., osseous lesions thirty per cent., hepatic, splenic, and gastric syphilis twenty-one per cent., and other types from ten to seventeen per cent.

3. More than one type of involvement was the rule in the individual cases of this group. There were only ten patients presenting no other evidence of syphilis than their positive Wassermanns.

4. Patients with syphilis should therefore be studied from other angles than that of the presenting type of involvement, in the effort properly to appraise their condition and susceptibility to treatment.

5. Sixty-five per cent. of the patients with cardiovascular syphilis had aortitis, and sixty per cent. myocardial changes.

6. Of the neurosyphilitics, forty per cent. had paresis and fifty per cent. clinical tabes dorsalis.

7. Fifty per cent. of patients with neurosyphilis had cardiovascular syphilis also.

8. Gastric and hepatic syphilis were recognized in fifty-two and forty-seven per cent. of the visceral cases, as against only fourteen per cent. presenting recognizable splenic involvement. Patients with cutaneous syphilis showed the familiar immunity from neurosyphilis and the reverse.

9. While pyogenic foci were present in seventy-four per cent. of the patients with resistant Wassermann reactions, no frank etiological connection was apparent. The same was true of alcohol, which was used by only twelve per cent. of these patients.

10. There was no evidence that Wassermann-fastness is the result of infection with any special strain of organism. In fact, the polystructural involvement in such cases suggests the contrary.

11. Eighty-four per cent. of the patients in our Wassermann resistant group have undergone symptomatic arrest today under the treatment received. Paresis and tabes dorsalis with gastric crises formed more than half the failures.

12. The amount of treatment to which a Wassermann resistant patient should be subjected cannot be exactly defined. The principles employed in making a decision, which are in effect the principles underlying the therapy of all late syphilis, were outlined. In particular, reversal of the Wassermann, while desirable, should not be the primary aim of the therapy. Symptomatic response, with arrest of the process, and the giving of as much treatment as to an early case, provided tolerance permits, are the important considerations.

13. A persistently positive serum Wassermann reaction seems to be an accompaniment of grave rather than of trivial syphilis. At least such is the case in enough instances to suggest the need for the most painstaking and repeated investigation of the clinical aspects of the Wassermann-fast case. Premature statements based on insufficient evidence as to the insignificance of a fixed positive Wassermann reaction are, we believe, to be deprecated.

14. Wassermann-fast patients should not, in our opinion, be discharged from periodical careful re-examination, with special reference to the cardiovascular and nervous systems throughout life. The frequency of such examinations should be dictated by the gravity and extent of the original process and the degree of apparent resistance to treatment.

Diagnosis and Treatment of Neurosyphilis.—H. C. Solomon (*Boston Medical and Surgical Journal,* December 30, 1920) says that from the point of view of the neuropsychiatrist, certain rules may be promulgated as to the use of lumbar puncture. Those which follow are similar to those given by Ravaut:

1. In cases of early syphilis showing symptoms indicative of central nervous system involvement, namely, headache, dizziness, ocular and aural symptoms, a lumbar puncture should be used. 2. All cases seen after the early secondary stage that are not to receive intensive treatment. 3. All cases treated from the primary or early secondary stage which do not give a negative Wassermann reaction in the expected time. 4. All cases showing mental or nervous symptoms, irrespective of the blood Wassermann reaction. This is based upon the fact that many cases of tabes, cerebrospinal syphilis, gumma, and even paresis, give negative blood Wassermanns.

In conclusion, it may be pointed out that:

1. The central nervous system is involved by syphilis very frequently in the primary and secondary stages; that this involvement is ordinarily benign and disappears symptomatically with or without treatment. 2. In a small number of cases, acute meningitis, meningoencephalitis, vascularitis, and gummata occur in the secondary period of the disease. 3. In about ten per cent. of all cases of syphilis, late neurosyphilis, tabes, paresis, meningitis, meningoencephalitis, gummata, and vascularitis develop. 4. Neurosyphilis is always serious, affecting the mind, utility, and life of the patient. 5. Diagnosis is often only possible by the aid of the spinal examination. 6. The earlier the diagnosis of syphilis is made, and the sooner treatment is instituted, the better the therapeutic results. 7. The

spinal fluid is often positive long before definite symptoms are present; hence the need of frequent lumbar punctures. 8. More intensive treatment is usually required to treat neurosyphilis than in the treatment of syphilis which does not affect the nervous system. 9. Cases of meningitis, acute meningoencephalitis, and mild vascular syphilis usually react favorably to intensive intravenous injections. 10. For these conditions intraspinous injections will at times accomplish more than intravenous therapy. 11. Improvement in tabes is more difficult to obtain than in the forms mentioned above. Many cases show improvement under intravenous therapy adequately administered, but will frequently do much better with intraspinous therapy. It is often the method *par excellence*. 12. In many cases diagnosed as paresis patients make fair recoveries under intravenous therapy. 13. Intraspinous injections and drainage of the cerebrospinal fluid may aid in the intravenous treatment of general paresis. 14. Intraventricular injections may at times give more favorable results than any other in the treatment of paresis.

Acute Syphilitic Meningitis.—Saint Pastous (*Archivos Rio-Grandensis de Medicina,* March, 1920), while admitting the great rarity of this condition, reports such a case in a married woman twenty-six years of age. The diagnosis was based upon the finding of a strongly positive Wassermann in the husband, a miscarriage, followed by a premature birth, a strongly positive Wassermann in the patient, both in the blood and in the cerebrospinal fluid, a strongly positive Nonne reaction and an abundant lymphocytosis. Examination of the spinal fluid was negative as to tubercle bacilli, as was its injection into a guineapig. Intensive antiluetic treatment instituted at the very beginning of the disease was absolutely without avail and the ending was fatal.

Course of Treatment for Early Syphilis.—G. O. Scott and G. H. J. Pearson (*Canadian Medical Association Journal,* October, 1920) say that the exclusive use of the organic arsenical preparations, though they will control the early stages of syphilis, tend to become of less value with time. The Spirochæta pallida very rapidly becomes arsphenamine-fast if exposed to closely repeated doses, and so is enabled to grow unchecked in its immunity to the drug. Combined arsphenamine and mercury are necessary for the proper treatment of syphilis, with the addition of potassium iodide for the purpose of breaking down the scar tissue in the lesions already formed, and so enabling the mercurial arsphenamine medication to act on the scar protected organisms.

Continuous Mercurial Injections in Syphilis.—Abadie (*Presse médicale,* February 18, 1920) deplores the prevalent tendency to interrupt mercurial treatment frequently. In syphilis of the eye he has found that the best results are obtained only by prolonged, continuous administration of intravenous injections of mercury cyanide on alternate days. The dose used was one centigram. Cases of syphilitic chorioretinitis were notably improved upon continuation of such treatment for four successive years.

Ulcerating Granuloma of the Pudenda.—H. N. Cumming (*British Medical Journal,* November 20, 1920) finds that this infection is common in the tropics and south of the equator. Although commonly considered a venereal disease, its origin is not definitely known. The fact that salvarsan treatment is ineffective may mean that the disease is not spirochetal. Antimony tartrate, on the other hand, is a specific for ulcerating granuloma, as it is for bilharziasis and other tropical ailments. The author describes the course of the disease and its cure in the case of a young male. Six months previous to treatment, the patient had begun treatment by applying permanganate and silvol to abrasions appearing on the dorsum of the penis. Other treatment failing, the author checked the disease by intramuscular and oral doses of antimony tartrate. He used three grains in twelve injections, and thirty orally. The case was complicated by gonorrheal infection. For more severe cases the writer recommends large intravenous doses over an extended period in a hospital.

Surgery of Umbilical and Ventral Hernia.—R. Warren (*Lancet,* November 20, 1920) classifies the latter less frequent form into fatty hernias of the linea alba, exomphalos of the newborn, and umbilical hernia of infants, due to stretching of the umbilical cicatrix, all of which are treated by the Mayo technic. Umbilical hernia, consistently treated with a flat pad, rarely needs operation. Of eighty-four cases of both types, the author operated in forty-nine cases of umbilical hernia in adults, the average age being fifty. Mortality was about twenty per cent. Suturing of the hernial orifice is based on the Mayo technic. The operation is commenced as if to cut off the hernia, in order to open the hernia at the neck. Hernias and fat overlying the protruding hernia should be dissected away. There were thirty-five cases of postoperative hernia. The average age was thirty-five. There was no mortality. The author rarely uses the right rectus incision; he recommends the use of silver wire filigree.

Diet after Gastroenterostomy.—A. MacLennan (*Practitioner,* December, 1920) says that the advice not to partake of alcohol or effervescent drinks should not be followed. Who does not know the comforts of iced champagne in seasickness; the pharmacology of this remedy is well known, and the action of alcoholic beverages in bilious regurgitation is closely similar to that in seasickness. Brisk beer, a sparkling or sour wine, induce the atonic stomach to contract. As much raw fruit may be eaten as the patient likes, and in these cases no better fruit than the gooseberry exists. Condiments of all kinds are excellent for the same reason. Indeed, the addition of vinegar to the lavage is a cure for bilious regurgitation, at any rate for the time. All edible vegetables may be eaten, provided they are properly cooked or chewed. As a general rule, the more agreeable food is to the palate, the better. In sickness persisting after anesthesia, there is nothing better than savory to stop the antiperistaltic action of the duodenum. Smoking in moderation after food is not harmful. Cases of gastric ulcer and duodenal ulcer, in which the pylorus has not been occluded, which have been treated by gastroenterostomy, are not referred to.

Diagnosis of Spinal Meningeal Tumor.—R. T. Williamson (*British Medical Journal,* August 21, 1920) recommends operation in cases of malignant as well as nonmalignant tumors. Diagnosis is most difficult when only root pains are present. In three cases cited the symptoms were indeterminate, the cases terminating in paraplegia. He contrasts the extent and duration of root pains in the case of tumor and other conditions. The author concludes that spinal meningeal tumor is indicated by the following symptoms: 1. Localized root symptoms (girdle pains or pain in one limb), followed after a considerable time by paraplegia with increasing intensity of symptoms. 2. In the absence of root pains, the increasing intensity of motor and cord symptoms. 3. Persistent abdominal or thoracic pains, bilateral or girdle in character. 4. Long standing brachial neuritis.

Mediastinal Neoplasm Under X Ray and Radium.—R. T. Lewis (*Lancet,* November 27, 1920) describes the case of a male, aged thirty-four, in whom a lump formed at the inner end of the left collar bone, causing shortness of breath and pain in the left arm. An enlarged gland was removed from the left side of the neck. Three exposures to the x ray caused disappearance of the lump and diminution of the cervical glands. Radium treatment caused the latter to disapear, but they recurred, causing cyanosis and shortness of breath, complete paralysis of the left vocal cords, edema of the chest from the clavicles to the costal margins, and the posterior axillary lines, and dullness of the left chest. After five successive radium treatments, thirty-seven c. c. of fluid were removed from the base of the left lung, greatly alleviating the symptoms, perhaps by causing the resorption of malignant growths infiltrated into the lungs, or of a possible pleural infusion. The latter is considered unlikely on clinical grounds, although x ray plates do not definitely demonstrate the existence of a mediastinal neoplasm.

Removal of the Parotid Gland for Malignant Growths.—M. J. Payne (*Southern Medical Journal,* November, 1920) thus describes the operation he performs: The incision employed is made as follows: Beginning just above the sternoclavicular joint, the incision is extended along the anterior margin of the sternocleidomastoid muscle, passing between the ear and the temporomaxillary articulation to about the zygoma. An incision is now outlined, beginning at a point in the preceding incision opposite the angle of the jaw and extending along the inferior margin of the lower jaw to the midline, thus outlining the skin flaps. It may be later required that the sternocleidomastoid muscle be divided near its attachment to the mastoid process. The incision is now deepened until the common carotid artery and its companion structures are brought into view. The lymphatics are sought for and the dissection is continued from below upward along the deep vessels reaching the bifurcation of the carotid artery, when the external carotid is doubly clamped above the lingual and cut. One should hesitate to divide the internal carotid unless forced to do so. Care should be observed to divide the external carotid above the lingual branch. It may be necessary, however, to divide the lingual branch. The temporomaxillary veins and the external jugular vein, as well as the many other small vessels, will now be divided. The dissection must proceed cautiously, working in front, behind and below, clamping all structures first proximal to the main artery and then distal, using thin or narrow clamps, and dividing the structures between the clamps. In this way, dissecting entirely from below upward, the gland is finally released from its deep attachments. The dissection may then proceed rapidly and easily, dividing, finally, the temporal branch of the carotid artery and the transverse facial artery; all ties completed, the skin flaps are then closed without drainage. The removal of the parotid for malignant growth should also include the removal of the submaxillary gland and the lymphatics lying along the inferior maxillary border to the midline.

Malignant Growth of the Upper Jaw and Antrum.—E. D. D. Davis (*Lancet,* November 27, 1920) comments upon the rarity of the disease, and details thirty-nine cases which came to his notice, as follows: 1, squamous carcinoma, nineteen; 2, round celled sarcoma, five; 3, endothelioma, seven; 4, papillomatous growth, eight; 5, chondrosarcoma, two; 6, spindlecelled sarcoma, two; 7, melanotic sarcoma, one. Chondrosarcoma is invariably inoperable; recurrences take place in order of malignancy; papillomata is the least malignant. Early diagnosis is difficult because not until the growth is developed do mechanical disturbances cause clinical signs. The orthodox method of excision of the upper jaw was discarded. The teeth were first attended to, and if necessary a denture prepared for insertion immediately after the operation. The Ferguson incision was made from the frontonasal suture down the nose and through the upper lip, and the cheek reflected back and upward as far as possible. The nasal bone, nasal process and facial surface of the maxilla as far as the malar were removed to expose the growth, and if the palate was not infected, the floor of the orbit with the growth was scooped out. To remove the palate the more common excision of the jaw was performed. The mucoperiosteum of the palate was saved, if possible, to form a flap to close off the nose from the mouth. Preliminary ligature of the external carotid artery is discouraged, except in dissection of the neck glands.

Traumatic Hysteria.—Michael Osnato (*State Hospital Quarterly,* February, 1920) presents the following conclusions: 1. The functional nervous reactions to injury are divided into two groups possessing important differentiating characteristics: a. In traumatic neurosis, the reaction is apparently caused by fear with immediate injury to the nervous system by actual trauma or later injury by sleeplessness and a general physicopsychical depression. Most of these individuals are essentially normal, the injury being almost entirely responsible. b. In traumatic hysteria, the reaction to the injury probably is not determined by any primary or secondary pathological considerations directly due to the injury, but is entirely an instinctive maladjustment in individuals who are both physically and mentally inferior. 2. A carefully analyzed case of traumatic neurosis will not show true hysterical stigmata.

Vincent's Angina—Stomatitis.—John E. Ganley (*Boston Medical and Surgical Journal,* October 14, 1920) describes various types of angina with differential diagnosis and treatment. He finally says: "Many patients present hypertrophied tonsils with large crypts. After the mouth has been cleaned up the tonsils should be removed; if not, there is a tendency to recurrence, as it is almost impossible to destroy organisms remaining in crypts in tonsils."

Vincent's Disease.—John J. Shea (*Southern Medical Journal,* July, 1920) considers Vincent's disease as a degenerative and not an inflammatory condition. A smear should be made and studied of every case of acute throat and gum disease, instead of placing reliance on a culture. Medicinal treatment is only temporary; surgical intervention is indicated for permanent relief. The infection, he thinks, should be made reportable, and in armies, schools and institutions it should be considered contagious and quarantined. The surgeon should always work in conjunction with a competent dentist.

Predisposing Causes of Miners' Nystagmus.—A. J. Martin (*British Medical Journal,* November 27, 1920) regards nystagmus as a functional nervous disease. It is a disease of exhaustion and its symptoms are similar to but milder than in war neurosis. It becomes manifest with the appearance of a fine general tremor. The disease depends on, 1, the nature of the work done; 2, excessive use of alcohol and tobacco; 3, illness; 4, accidents, especially to the eye; 5, heredity, the disease being stronger in the younger than in the older generation; 6, exhaustion, especially due to bad eating habits.

Prevention of Miners' Nystagmus.—D. L. Anderson (*British Medical Journal,* November 27, 1920) states that this disorder is caused by abnormal refractive conditions of the eye. Astigmatism is the most frequent predisposing cause. When ametropia is present, with nystagmus, incapacitation of the miner for his work usually follows. Diseases of the labyrinth, of the cerebrum and the cerebellum also are causes, remote and direct, of nystagmus. The author finds the age of incidence to coincide with the age of presbyopia. Heredity of the ailment is really heredity of the predisposing causes. The author advocates the establishment of a fixed standard for testing the eyes of colliery workers, and the elimination of those who are below this standard, which he proposes to be Snellen 6/18 with each eye, and Snellen 6/12 with both.

Treatment of Some Forms of Permanent Essential Cephalea by Lumbar Puncture.—G. Fumarola (*Archivo generale di neurologia e psichiatria,* March, 1920) records the history of a number of patients in whom he tested the effect of lumbar puncture upon essential headache of a permanent character in order to determine with greater certainty the pathogenesis and to discover the exact and safe criteria for performing lumbar puncture. He quotes also the experience of Mingazzini, who had preceded him in such tests, and states that although their experiments could not yet bring a conclusive answer to these questions, they felt that from their experience lumbar puncture was justified. In all the cases tested, with few exceptions, the headache disappeared definitely or was improved.

Vaccine Treatment of Rheumatoid Arthritis.—H. W. Crowe (*British Medical Journal,* November 27, 1920) gives the general symptom picture, anemia, cyanosis, contracture, and degeneration of muscle and joint tissue. Vaccine treatment has hitherto not been encouraging in the absence of specific foci of infection. The causal organism has been variously described, and nonspecific vaccines have been used. The author believes that the infection is caused by the Staphylococcus epidermidis albus, and has treated 143 cases with its vaccine. A few patients became worse, but most of them were definitely improved, and a number were cured.

Effect of Some Antipyretics on the Hearing.—Macht, Greenberg, and Isaacs (*Journal of Pharmacology and Experimental Therapeutics,* April, 1920) studied the effects of a large number of antipyretic and analgesic drugs and of their combinations on the acuity of sound perception. Acetanilide, sodium salicylate, acetylsalicylic acid, phenyl salicylate, and some other drugs were found to decrease the threshold of hearing, while acetphenetidin, antipyrine, pyramidon, and some other drugs increased the threshold. Various combinations of the drugs were found to produce results which in the case of some were additive but in the case of others, of a synergistic character.

Senecio Poisoning.—A. R. Cushing and H. E. Watt (*Lancet,* November 27, 1920) state that the symptoms are frequent in Canada, South America, and New Zealand, as liver cirrhosis of cattle and horses. In Senecio latifolius, two alkaloids were found, senecefoline and senecifolidine, which, administered in small doses by the mouth or subcutaneously, gave the characteristics of senecio poisoning. The liver was congested and swollen, and many of its cells were in a state of degeneration, and the whole organ was in the early stages of cirrhosis. Senecio jacobæ contains alkaloids of toxic powers similar to the alkaloids of latifolius.

Operations for Nerve Injury.—J. L. Joyce (*British Medical Journal,* September 25, 1920), in a study of twenty-two cases, irreparable by end to end union, where nerve transplanting was performed, finds that the method of nerve transplants gives good results. Double lateral implantation was successful in various degrees in four out of six cases. Free autogenous transplantations resulted less favorably; but the author believes that the two latter operations are deserving of further research.

Operations for Nerve Injury.—M. F. Forrester-Brown (*British Medical Journal,* September 25, 1920) has analyzed 643 cases of nerve injuries. Study of 237 cases of suture shows that twelve per cent. of the patients can do heavy work, and thirty-five per cent., only light work. Of 158 suture cases, twenty-eight per cent. showed complete recovery, nineteen per cent. complete sensory, twenty-one per cent. complete trophic, fifty per cent. incomplete in all three functions. The complete recoveries show five median, eight musculospiral, and several ulnar cases. The author suggests exploration in peripheral nerve injuries, in the absence of steady improvement within one or two months of healing. Tendon transplants give uniformly good results, only one case in ninety-six failing.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting, Held in New York, March 23 to 25, 1920.

The President, Dr. Claude C. Lytle, of Geneva, in the Chair.

SYMPOSIUM ON GASTROINTESTINAL DISEASE.

(Continued from page 696, Vol. CXII.)

Practical Clinical Examination of Upper Gastrointestinal Tract.—Dr. Alan A. Jones, of Buffalo, in discussing this subject further, said that acute gastritis, with its distress after eating, should be remembered as a cause of sudden pain in the upper abdomen. The immediate response to lavage, rest and starving gave the diagnosis. Chronic gastritis was caused by bacterial invasion. When the mucous membrane was involved, there was nothing to prevent the growth of microorganisms, and the condition was prolonged. With the Rehfuss tube one could detect the presence of mucus. Microscopically an abnormal number of leucocytes were found. Examination of the contents or the washings of the empty stomach revealed these findings. The food was poorly digested as shown by examination of the stools.

Achylia gastrica was imposed on intestinal digestion. The failure of the gastric hormone no doubt unbalanced the hormones of the pancreas. Chronic diarrhea was often associated with achylia gastrica.

In duodenitis streptococci were commonly found in the duodenal contents and also the colon bacillus. Catarrhal jaundice had long been considered infectious in nature. The presence of jaundice, which gradually deepened without pain, and the duodenal contents, were indicative of an inflammatory state of the upper part of the digestive tract. There was stasis of the duodenal contents. How far the pancreatic duct and the pancreas might be involved was difficult to estimate. Infection might extend into the liver.

In carcinoma of the stomach a tumor at or near the pylorus, vomiting, increased peristalsis, and loss of weight stamped the diagnosis. Diagnosis should be made as early as possible. Occasionally an instance was seen where there was no anemia or pain; no tumor was felt, and no excessive peristalsis was found; appetite might be maintained, and the tongue might be clean. In these cases occult blood in the gastric contents and feces and radiographic evidence of a filling defect were suggestive. One examination was apt to be inconclusive, but repeated examinations seldom failed to lead to a conclusion. Carcinoma when involving the cardia usually caused dysphagia. The differentiation from cardiac spasm was important; the diagnosis should be made by the x ray.

The common and important symptoms of pyloric stenosis were copious vomiting of gastric contents, prominence in the epigastric region, and the presence of peristaltic waves across the stomach. In case of benign stenosis there was an absence of blood and the appetite was good.

Acute dilatation of the stomach occurred in the course of grave infectious diseases and was recognized by marked gastric distention and symptoms of collapse. Lavage was absolutely essential to save life. The differential diagnosis between benign and malignant stenosis might be worked out by the Wolff test.

In gastroptosis the habitus of the body showed the diagnosis. There was a sense of weight in the abdomen. Patients found it impossible to gain weight and their vitality was lowered. It might be accompanied by one or more motor or sensory disturbances of the stomach. Fluoroscopic and radiographic examinations determined its presence. Gastroptosis at the bedside might escape notice, but could be seen by inflation of the stomach, when its outline might be percussed.

Dietetic Treatment of Disease of Upper Gastrointestinal Tract.—Dr. Arthur F. Chace, of New York, said the functions of the cardiac and pyloric portions of the stomach were brought out by the investigations of Professor Cannon of Harvard University. Peptic digestion occurred only in the pyloric end. Furthermore if the empty stomach was in a state of contraction peristalsis came on and continued until the stomach was empty. Experiments had shown that fat emerged from the stomach so slowly that it was present in the intestines in the same amount without variance. Carbohydrates emerged rapidly, and the small intestine received a large bulk of carbohydrates. Proteins were not discharged to any considerable degree for an hour or more. In nine out of sixteen cases no food had passed out of the stomach in half an hour. In mixtures of fat and protein the protein left the stomach more slowly than if alone. In mixed fats with carbohydrates the carbohydrates were discharged less rapidly. In mixtures of carbohydrates and proteins, if proteins were the first element given, they held back the carbohydrates. The average rapidity of discharge increased from fat to protein and from protein to carbohydrate. Rehfuss and others conducted experiments to note the gastric response to various foods, using the fractional method of analysis. It was found that milk drunk slowly left rapidly. Milk which had been boiled five minutes formed small flaky curds. It was concluded that boiled milk was dietetically to be preferred. Eggs left the stomach sooner than meat. With beef products the average evacuation time was two hours and a half in an individual with a rapidly emptying stomach. Pork products showed an average evacuation time of two hours and three quarters for rapidly emptying stomachs. Lamb was found to require an average of two hours and a half for a rapidly emptying stomach. Lamb stimulated acidity more than beef or pork. Having in mind these physiological facts regarding normal digestion, we might proceed to the treatment of hyperacidity, subacidity, and other conditions.

Hyperchlorhydria was a gastric disorder in which the secretory glands elaborated gastric juice so high in ferments that it caused symptoms of pain. Hyperchlorhydria should not be confused with gastric succorrhea in which an increase of gastric juice was secreted without reference to food and might be found in the stomach for several hours; this was more serious than hyperchlorhydria. The ideal diet was one which produced the minimal stimulating effect on secretion and caused the highest amount of hydrochloric acid. Meats containing few extractives answered the purpose well. The diet should be protein, but in the case of animal protein the extractives should be removed. Beef should not be basted. Olive oil before meals and unsalted butter with meals constituted a good form of administering fat. Highly seasoned food, alcohol, uncooked vegetables, and above all sugar should be avoided. This latter food stuff was perhaps more responsible for hyperacidity than any other article in the diet. The great increase in the cases of hyperacidity was due to the increased ingestion of sugar. Sugar increased the gastric distress after meals; it checked secretion but caused osmosis. The presence of hydrochloric acid checked the ptyalin digestion so that dextrine was found in the stomach. Bread should be partially dextrinized. Only finely divided bread should be used. Cereals should be used with butter instead of sugar. It is very desirable to distribute evenly the amount of food taken at each meal in hyperchlorhydria so as to prevent the accumulation of free gastric juice in the stomach. In cases of continued secretion of gastric juice substantially the same methods were in order.

Subacidity was a gastric disturbance in which the glands elaborated juice so deficient in ferment properties that the stomach did not call for food. In this condition all food should be insalivated, and it was desirable to utilize any psychic means to make the food palatable. The diet should be made to include substances which stimulated gastric secretion, such as meat extractives and seasoned food, although the amount of protein should be reduced. In cases of atrophic gastritis where there was an entire absence of gastric juice, the dietetic principles used in subacidity should be applied, realizing that gastric digestion must be carried on by the pancreas. No animal protein should be given, and the maximum amount of protein should not be more than forty grams a day. The diet should be a carbohydrate one. After a period of three months these patients could take animal protein.

Myasthenia gastrica was a functional gastric disorder in which the stomach wall lost its muscular tone, and the chemical and mechanical reflexes controlling the pylorus permitted stagnation of food. The condition, one of the most common of gastric disorders, was characterized by belching after meals and by a feeling of satiety after a small amount of food. The history shows overeating, frequent eating, and distention of the stomach with liquids. In outlining the diet the effect of the emptying time should be considered. Only six ounces of liquid should be given at each meal, since this amount was all that was required for the proper mixing of the food. A mixed diet was preferable; carbohydrates in the form of cereals and puréed vegetables should be given. The nourishment should be evenly distributed throughout the meals of the day. Each meal should be small in amount so as to avoid overloading the stomach, and independent feedings should be given between breakfast and luncheon and between luncheon and supper. In severe cases the patient should have one hour's rest after meals. Where marked dilatation was present the foot of the bed should be raised. In such cases the stomach should be given complete physiological rest for a few weeks to induce contraction to its normal size. Such rest was obtained from duodenal feeding. Eight ounces of warm milk with an egg injected through the duodenal tube would be found of value. Rectal alimentation did not insure maintenance of nitrogen equilibrium.

In gastric ulcer it was necessary to neutralize the acid, but the food should be soft so as not to irritate the ulcer. Feed every one or two hours and give plenty of carbohydrates. In extreme cases of a neurotic type the administration of milk, eggs and lactose through the duodenal tube was indicated. In patients with hemorrhage from ulcer nothing should be taken by mouth for three days; on the fourth day milk with lime water was to be given every hour and then the intervals lengthened. The dietetic treatment of ulcer required individualization. The tendency was to give a full Lenhartz diet. Two important points must be emphasized—that of giving an adequate amount of iron in the food, at least fifteen milligrams a day, which could be given in a carefully prepared vegetable pulp; second, the avoidance of scurvy.

The dietetic treatment of cancer was different than that of ulcer. In this condition meat juices were indicated in order to stimulate secretion. The food should be made palatable; condiments and alcohol were indicated. Many of the predigested foods should be utilized.

In the treatment of these conditions particular pathology should be constantly kept in mind. The physician should consider whether the foodstuffs increased or diminished secretion; second, the effect on the motility of the stomach, and third, the effect of the foodstuffs on the pathological lesion itself. The diet should supply the caloric needs of the body. Here it must be remembered that a patient weighing 150 pounds confined to bed should have 2,000 calories.

Drug Treatment of Disease in the Upper Gastrointestinal Tract.—Dr. WALTER A. BASTEDO, of New York, presented the following summary of the results obtained by Rehfuss and others in the treatment of gastrointestinal disease with atropine and belladonna:

Action on acidity and secretion.—In man, in cases of hyperacidity with excess of secretion at the end of the digestion period, atropine or belladonna, even in maximum doses, did not cause diminution of secretion or of acidity. In cases of continued secretion atropine in maximum doses (one fiftieth of a grain) did not lessen the acidity during the digestive period, but it might result in an inhibition of the continued secretion. In cases of continuous secretion repeated maximum doses of the tincture of belladonna by mouth caused a cessation of the secretion after the food left the stomach but also caused an increase of the acidity. Fourth, atropine diminished the psychic hypersecretion. The complete failure of atropine to affect secretion favorably was noted except in the continued secretion when there was no food in the stomach. Moreover, the drug did not depress, and it checked the continuous secretion only when given in maximum doses by hypodermic injection.

Action on the motor functions.—It was found that atropine could exert three kinds of motor effects: First, the abolition of abnormal spasm, such as pylorospasm, an effect obtainable in certain cases only and then by maximum doses; second, the abolition of tone, an effect not desired in therapeutics; third, the abolition of hunger contractions—to obtain this effect in dogs doses too large to be given to man were used.

Conclusions.—1. In ordinary hyperacidity atropine had no useful effect in any dose. 2. In continuous secretion cases it might check the secretion but only in maximum doses. 3. In spasm it might relieve but only in maximum doses. 4. In hunger pains it might relieve but only in dogs; not proved in man. 5. In diminishing hypersecretion due to extragastric causes it might be useful. 6. In the doses usually employed atropine and belladonna were wholly without effect on the secretory and motor function of the stomach.

Hydrochloric acid.—1. In cases of achylia gastrica a deficiency of hydrochloric acid might be partially overcome by gastric medication. 2. Hydrochloric acid should always be accompanied by pepsin. 3. In the achylia accompanied by diarrhea acid promised good results. 4. When acid produced diarrhea alkalies should be given at the same period but not at the same time, the amount required to be judged by the reaction of the urine.

Bitters.—1. In convalescence from acute illnesses bitters should be given provided they were taken within ten minutes before eating. 2. They should be given in bitter doses. 3. In subacidity to promote secretion of gastric juice. 4. In achylia to act as an appetizer. 5. If the patient was in a state of normal nutrition but psychically disturbed, they would be useless. 6. In hyperacidity they should not be given. 7. If the stomach and bowels were deranged the bitters might nauseate. 8. The effect on appetite was solely on the taste buds, so that they should never be given in capsule.

Strychnine.—In the spinal cord strychnine had no power to originate impulses, that is, it did not produce motor effects but it facilitated the passage of impulses, as was shown by increase in muscular tone. It would seem that strychnine had a similar effect on the stomach wall. It had been found that the application of strychnine to the plexus resulted in stimulation and increased tone of the abdominal muscles and of the wall of the stomach itself. These occurred in normal animals and in stomachs severed from the nervous system and were therefore due to the action of the strychnine on the intrinsic nerves. Strychnine was therefore opposed to morphine and adrenalin. Cannon had found that if the stomach had good tone, the introduction of liquid at once started peristalsis; hence the use of strychnine in gastric atony was physiologically sanctioned. Whether strychnine promoted spasm was not known, but it was reasonable to suppose that it did not. In full therapeutic doses, therefore, strychnine tended to increase the tone of the stomach, the peristaltic response to food, and to promote secretion.

Alkalies.—Given for the pain of distention and for contraction pains coming early and late. Pain in ulcer, which came on three or four hours after eating and was relieved by alkalies, was known as hunger pain. To understand drug action it should be known what condition was being treated. First, the irritation of food. In cases without pyloric obstruction the pain did not come on when the stomach was filled with food but only when the stomach was empty, and then the pain was relieved by taking food. In patients with pyloric obstruction the pain might come on at the usual time although the stomach was filled with food. For example, a patient was required to take malted milk at 5 o'clock every afternoon to relieve the pain. One day when he had obtained complete relief at 5 o'clock a stomach tube was passed and there was obtained not only the soda and malted milk but the food he had eaten at lunch. Therefore, the irritation of food was not the cause of pain.

What caused the pain? In ulcer the contents might be highly acid and yet there would be no pain. A fair proportion of ulcers were not accompanied by hyperacidity. The Mayos had found ulcer in a number of cases of achylia. Could the contact of the acid with an ulcer produce these pains? It was agreed that the acid of the gastric juice secreted by the stomach seldom exceeded one half of one per cent., and this was mixed with mucin and other substances, yet Hurst and others had repeatedly placed hydrochloric acid in stomachs without causing pain. Furthermore, hunger pain might be relieved by acids, such as lemons. Patients had been seen who were habitually relieved of pain by lime juice. Therefore, if acid relieved the pain and the same kind of pain came on with hyperacidity, acid did not cause hunger pain.

Pyloric spasm.—This would seem in certain cases to cause pain, yet it was frequently present without any pain whatever. It had not been shown whether the pain was due to the passage of acid into the duodenum.

Hyperperistalsis.—This was present only during the digestive period; furthermore, hunger pain was relieved by food though it set up peristalsis. Hunger contractions now recognized as normal occurred at the usual time of hunger pains and had been assumed to be the cause of hunger pain; they were immediately stopped if food was placed in the stomach or the mouth. Contractions were not the cause of hunger pains.

Hyperesthesia.—Carlson attributed the pain either to tension of the stomach wall or to hyperexcitability. There must be a hyperexcitability of the pain nerves; but radiography had shown that hypermotility and hunger pains occurred at the same time.

In summing up Dr. Bastedo said that it had been found that in many cases of ulcer and hyperacidity there were hunger pains which were relieved by alkalies. These were attributed to hypermotility but might be present when there are no contractions of the stomach. They might appear when there was subacidity or anacidity. They were not brought out by the most vigorous peristalsis, and were relieved by food. It must be concluded that the cause of hunger pains was not established and it was not known how alkalies checked them. In their administration something might be learned of the habits of the patient. In these cases physicians prescribed ten grains of soda without relief before meals, but the patient obtained relief at the time of the meal. Dr. Bastedo said that he had found that a level teaspoonful weighed about 120 grains. Was it not possible that the doses administered had been too small or were given at the wrong time? A level teaspoonful on arising had been found insufficient to alkalize the urine. Dr. Bastedo recommended that the alkalies be given with some carminative and with plenty of water at a period about three or four hours after a meal, as he had found that the alkalies acted better when combined with peppermint.

By repeated test meals it had been found that sodium bicarbonate or magnesia produced a compensatory highly acid secretion. It was obvious that greater doses of sodium bicarbonate could be given than of magnesia, but weight for weight magnesia could neutralize more acid. According to some investigators, sodium was more prone to promote acidity and magnesia to reduce it. As a matter of fact, there was no reason for reducing acidity of the digestive period, and no attempt should be made to reduce digestion completely. The pains were probably due to distention, and sodium bicarbonate was the best treatment. In retention the late pain was most frequently caused by the accumulation of gas or organic acid or it might be due to contraction pains, as the digestive contractions were prone to take on a tetanic character. It was Dr. Bastedo's belief that sodium was better than magnesium because it liberated carbon dioxide.

Summary.—Alkalies were of little use during the digestive period except when there was an accumulation of gas, when sodium was the choice. They relieved hunger pains and should be given during of after meals. Alkalies did not check adhesion pains.

SECTION IN MEDICINE.

Preventable Diseases of Adult Life.—Dr. EUGENE L. FISK, of New York, presented this paper and showed statistical charts compiled from life insurance sources. Dr. Fisk said that one of the common diseases of adult life was old age, another was middle age. These were not limited to adult life. Old age due to syphilis might be acquired *in utero*. From that time on all stages of senility occurred, and in many individuals old age was reached during the period of youth. Physicians were too prone to label a patient as a case of this or that disease, or if a diagnosis was not possible, to dismiss the patient with a clean bill of health. To prevent old age or postpone it had seemed to many a quixotic proposition. Old age was always premature, and the physical changes noted in the advancing decades were not due to time but to an abstraction. Physical collapse, whether abrupt or spread over a period of eighty years, was the result of cumulative effects in the environment or in the individual. There were no pathological changes that were normal for any period of life.

Factors producing old age were: heredity (always influential); infections, acute or chronic by bacteria and parasites; poisons from within and without, including drugs; endocrine or other organ disturbances releasing poisons or interfering with their destruction; protein sensitization; hormone deficiency or excess; food deficiency, general and specific in lack of some special substance, as vitamines or amino acids; food excess; physical trauma —physican overstrain was not to be regarded as a determining factor; psychic trauma, such as fear, grief, and emotional distress which were more destructive than mental overwork; physical apathy—lack of muscular effort was justly charged with degenerative effects; psychic apathy, which was the cause as well as the result of failing physical powers.

Loeb by experiments on the fruit fly had succeeded in increasing its life span 900 per cent., by protecting it from adverse influences. Focal infections in the teeth and tonsils, toxemia from constipation were adverse factors. According to statistics mitral regurgitation without hypertrophy showed an excess mortality of sixty-five per cent.; with hypertrophy showed an excess of one hundred and five per cent.; with a history of rheumatism an excess mortality of two hundred per cent. This was contrary to the teachings of McKenzie that murmurs were of no consequence in themselves. Syphilis with a history of treatment showed an excess mortality of two hundred per cent. Investigations of different groups of people at different ages showed the necessity of periodical medical overhauling. In the industries studied over thirty-five per cent. of the employees required some kind of medical supervision. Of these less than two per cent., required antisyphilitic treatment. It was necessary to search for other sources of infection while doing a routine Wassermann. There was no basis for the high figures of syphilis among food handlers. Less than three per cent. of food handlers in New York were found to have syphilis.

Dr. Fisk made the following recommendations: More periodical physical examinations, more thorough teaching of diagnostic methods, establishment in the industries of men of the type of medical supervisor for the supervision of industrial employees, and for inhabitants in general. Diagnostic methods should be taught from the viewpoint of finding out everything, and not simply diseases. A department of health was needed to coordinate all these activities, and we need universal military training of young men between the ages of eighteen and twenty-one was needed also in order that the young men should be under strict medical supervision and be taught the fundamentals of personal hygiene.

Prevention of Diphtheria.—Dr. W. H. PARK, of New York, said that no marked changes had been made in the medical treatment of diphtheria in the last few years. In the treatment by antitoxin the single dose was used instead of multiple doses. The use of antitoxin subcutaneously required two days for its full effect, while the use intramuscularly took still another day. With the intravenous dose the antitoxin passed out into the tissues immediately, whereas in the subcutaneous or intramuscular injection it remained in the tissues and diminished gradually for one to two weeks. Treatment, therefore, had come down to a single sufficiently large dose intravenously. Many physicians were not familiar with the method of giving an intravenous dose. In babies it was given in the jugular vein; in older children in a vein in the arm. Chills might occur after the injection, but recently an antitoxin of high potency had been prepared and filtered so as to be perfectly clear, and in not more than two per cent. of the cases had chills occurred. Chills did no real harm, but were objectionable. The only cases in which an intravenous injection was undesirable were those in which the patients had had treatment before.

Dr. Park spoke about toxin-antitoxin injections and expressed the hope that they would eventually eliminate diphtheria. In 1893 cultures were used for the diagnosis of diphtheria. It was then thought that by better methods of reporting and by finding out the carriers that the prevalence would be diminished, but as far as statistics went that made no difference in the outcome of diphtheria. In 1895 antitoxin was used, and antitoxin reduced the death rate by two thirds.

The value of this work depended on the Schick test, which consisted of the intracutaneous injection of a small amount of the toxin so that it remained in contact with the cells. If no local reaction took place, the individual had sufficient antitoxin in his body and was immune to diphtheria—negative Schick test. This was particularly true in infants and young children; in older people it might be found that some toxic substances in the broth injected caused a pseudoreaction, but with practice most of these pseudoreactions could be determined. Dr. Zingher had found from studies on children extending over years that in only three per cent. of the children did a negative Schick test change to a positive test. So that a negative Schick meant an immunity for years, and Dr. Park believed for life. Occasionally there were gross discrepancies in the Schick test, due to imperfect toxin or methods. The Schick test enabled one to find who were immune. Infants obtained their immunity from their mothers, and from infancy on to two years this immunity passed out, so that the greatest number of nonimmunes occurred in infants between the second and third years, and from then on the percentage of nonimmunes grows less as ages advanced. The toxin-antitoxin mixture was used on the nonimmunes. This product had strong immunizing properties, and it had been given to infants one week old in full adult doses with no deleterious effect. After one injection seventy per cent. will be immune at the end of one month; two injections will give about ninety per cent. of immunes, so that by reinjection most of the nonimmunes could be rendered immune. After investigations for four years and a half Dr. Park said he believed that the immunity conferred was permanent. Babies stood the immunizing doses better than adults and older children in whom more marked reactions occurred with rise of temperature, prostration, etc. It was therefore believed that the babies between six months and two years should be the ones to be immunized and an immunization of the whole infant population could be obtained. The method was entirely harmless, it gave permanent immunity, and would eliminate diphtheria.

(To be continued.)

Letters to the Editors.

MEN OF SCIENCE IN RUSSIA.

Pittsburgh, Pa., *January 10, 1921.*

To the Editor:

I was gratified to read your editorial (Men of Science in Russia) of December 25, 1920, and deeply impressed with the truthfulness and moral of the last paragraph which reads:

"As medical men, we are not interested in politics. Our business is to prevent suffering and not to inquire into what form of Government suffering men and women live under."

Let us present to ourselves the picture of having our country at war for nearly seven years, hundreds of medical men killed in battle and by privation, and the remaining workers in the medical ranks confronted by thousands of cases of typhus and typhoid fever, but no serums or antiseptics; thousands of cases of malaria, but not a grain of quinine; hundreds of thousands suffering pains of all kinds, but no morphine; thousands of waning hearts, but no digitalis. Let the surgeons of America picture to themselves thousands of patients groaning with pains while they are removing appendices with penknives, amputating limbs with carpenters' saws, dressing wounds with newspapers, and doing all that without a drop of anesthetic. And think then of a traditional friendly nation, a people of high ideals and abundance, across the seas, refusing to sell for gold part of their abundance of medical and surgical supplies.

Who knows how many more tens of thousands of our boys would have been killed or maimed in 1918, or how differently the history of this last war might have been written, had not Russia held back the would be conqueror by sacrificing several millions of the flower of her sturdy manhood, and now when men, women and children are dying in Russia for lack of those supplies which blundering European diplomats denied them, when the people of Germany and Scandinavia send what little medical aid they can, shall we, the medical men of this great republic, see the physicians and surgeons of that country which produced a Pirogroff and a Metchnikoff, in their frightful struggle, and not offer a helping hand?

Now, my dear editor, you ask your readers to state what they think should be done in the matter. My humble opinion is that the New York Medical Journal should start a fund for medical relief and ask for volunteers to purchase medical and surgical supplies and instruments and despatch them at once to Russia. Also to ask for volunteers to form and equip medical units to proceed to Petrograd, Moscow, Kief, and other Russian centres. Although the country is blockaded, medical supplies can be sent, and some have already been sent through countries friendly to both the United States and Russia. It is our duty as men of a profession which is nonpolitical and nonsectarian to heal even the wounds of our enemies, but Russia is an old friend, and we have never been at war with her.

Henry Finkelpearl.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

Vol. CXIII, No. 6. NEW YORK, SATURDAY, FEBRUARY 5, 1921. Whole No. 2201.

Original Communications

ENDOCRINASTHENIA.*

By William V. P. Garretson, M. D.,
New York.

An acute development of intense interest on the part of the medical profession, pertaining to the importance of the organs of internal secretion, is manifest at the present time to such degree as to excite a little apprehensiveness. Enthusiasm is an excellent attribute, but without balance of judgment and knowledge of fundamentals relating to a subject, great harm may occur in creating a group of extremists—the optimistic enthusiasts on the one hand, who see in endocrine therapy a panacea, and the pessimistic iconoclasts on the other, who view it as a passing fad.

In these days of chaos and unrest, weird trends of thought hold sway. The potential susceptibility of the human mind to waves of thought is as mobile as the field of ripened grain before the wind. When apparently normal and intelligent minds are swayed to extremes concerning political, social, moral and religious codes, it indicates that a state of instability prevails throughout the aggregate psychic realm of the world today. This is the natural reaction of readjustment following any tremendous upheaval, be it individual or collective.

The many radical changes from groove ridden medical thought, which have been the outcome of recent endocrinic interpretations of physiology, pathology and therapeutics, are certain to create some degree of readjustment instability, until the new order of things approaches a balanced level. Time and experience are the factors which establish truths.

The conscientious physician who has had the experience of a medical career of sufficient duration to enable him to overcome his youthful sense of wisdom, will sooner or later arrive at the conclusion that he knows but little more than his medical grandfather, and he will realize, but probably be too proud to admit it, that his usefulness to suffering humanity is not what he hoped it would be. The perplexities and disappointments in the solution of medical problems cannot help but cause him to comprehend his limitations if he is honest with himself, hence the eagerness with which he grasps at that which offers something new; and if not painstaking and patient enough to consume sufficient time to acquire experience, he will again have his hopes blasted and be ready to denounce and discard the offer. So at the outset I am prompted to say in approaching the topic under discussion—Do not allow your disappointments to lead to discouragement and denunciation.

The study of the endocrines, in my opinion, and I trust I am not an extremist, will lay bare the foundation upon which medicine will be reconstructed. It is creating already an awakening of medical interest such as no other method of therapy ever prompted, and yet it is not a new thing. Organotherapy dates back to remote ages. In the days of Confucius, decoctions of toads, frogs, lizards and spiders were credited with marvelous medical powers. These were but solutions containing the hormone of the cutaneous suprarenals which the skins of these animals and insects contained.

Probably seventy-five per cent. of our present day therapy was at one time purely empirical, hence it is unwise to ridicule a procedure which produces results, because there is no positive scientific explanation of its effects. We are still groping in darkness to a great degree, but as the barrage of ignorance concerning the functions of the organs of internal secretions is lifting, we are beginning to see through the haze the solution of many problems heretofore unsolved.

The physician who limits his work to the practice of a specialty is prone to develop a tubular vision relative to the importance of the special part of the anatomy with which he is concerned, and attribute the major portion of his patient's difficulties to the disturbed functions of the particular viscera in which he is interested. A broad perspective is a valuable and essential asset.

As one specializing in nervous and mental diseases, it has been my belief that the functions of all organs in the body were dependent primarily upon the integrity of the nervous system, and the balance of body physiology depended upon a proper correlation of these functions. So far as this goes it sounds reasonable and undeniable, yet it has not explained satisfactorily the etiology and symptomatology of that large group of patients, who are classed as victims of neurasthenia, psychasthenia, hysteria, and the neuroses, the socalled functional cases. To me it has always seemed an expression of ignorance to label a patient with the terms above mentioned.

---

*Read by invitation before the Westchester County Medical Society, April 20, 1920, at New Rochelle, N. Y.; read before the Riverside Practitioners' Society, New York City, October 26, 1920; read before the Polyclinic Clinical Society, December 6, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

The psychanalytical methods of Freud and his disciples opened a fertile field, and to this many of us turned with great enthusiasm, hoping therein to find the solution of etiology and symptomatology of this large group, but here again, although the great importance of this field of study is undeniable, it has fallen short of explaining much to be desired, although to its overenthusiastic exponents this is not the case. It leads far afield from all that is tangible and leaves one groping in the psyche for all etiology and symptomatology. Is it too materialistic to believe that a physical basis is existent, which can satisfactorily explain the phenomena of these nonorganic states? Personally, I have always held that there must be a physical component and in such understanding of endocrinic phenomena as we now possess, I believe that this fundamental etiological factor has been uncovered.

To quote from a previous paper (1): "A rough simile illustrating the writer's conception of the primary dominance of the endocrines, is to consider the hormones of the vegetative glands, the activating agent or the fire which keeps up the steam or nervous energy, socalled. The nervous system, structurally, is the dynamo which runs the human machine. The chemical composition of the individual nerve cell, and collectively of the nervous system, is analogous to the water in the boiler, which, generated into steam, makes the machinery go. If the supply of water is deficient (nutritional nerve exhaustion) the energy is lessened, as is likewise the case if the fires are low (glandular exhaustion). If there is too much fire (hypersecretion) and too much steam, the boiler will burst and a physical and psychical explosion will occur. The extremes of hypofunction and hyperfunction are thus expressed.

"The psyche, that all powerful intangible reflector of physicochemical function, is maintained in proper balance through the normal action of this mechanism just described. Its responses, in socalled psychic reactions, are dependent upon this all dominant endocrine function. As a buffer to these vital functions, it responds in varying degrees, as influenced by experiences based upon instinct and memory complexes, and the socalled shock reactions are accordingly expressed and reflected by symptomatic evidences. That large group of patients, generally misunderstood and frequently classed in civil life as neurasthenics, psychasthenics, hysterics, cyclothymics, and hypochondriacs, is now capable of an intelligent analysis and rational therapy, if one will concede that these are the victims of an endocrinasthenia. . . . The psychic irritant may be suddenly or gradually removed by psychotherapeutic procedures such as active suggestion, through hypnosis or by psychoanalysis, and immediately upon its removal, a reaction, expressed through the vegetative nervous system, produces a physiological response. . . . The lowered psychic threshold is dependent upon endocrine fatigue, which is created frequently by the accumulated weight of the prolonged psychic irritants. When the endocrine exhaustion occurs, then, and not until then, does the psychoneurosis or psychosis, as the case may be, become apparent."

The interrelation existing between the nervous system and the endocrines is a very potent factor in the production of reciprocal expressions of dysfunction, hence in the treatment of the socalled functional disturbances of the nervous system, the balancing of endocrine dysfunction is quite essential before one can obtain a curative reaction from psychotherapeutic procedures.

It is in relation to this special field of work that my interest in endocrine function and therapy was primarily stimulated. That large group of patients referred to the neurologist, whose symptomatology is not consistent with the usual etiological objective evidence, in whom no organic disease is discernible, and who complain mainly of subjective symptoms, we have been prone to consider victims of psychic traumata and repressed complexes, and we find in the vast majority that such is the case. We proceed by analysis and layer by layer penetrate the unconscious, and psychologically interpret the relation of their symptoms to their repressions, and explain their fears, obsessions, anxieties, and physical disturbances quite satisfactorily, but in my opinion today, the elimination of the psychic irritant is only a small part of the problem. The continued assault of the psychic irritant will not express its symptomatology until it has been sufficient to undermine the balance of the endocrines, and after its removal the return to normal health will not occur until the endocrine readjustment is effected, and if this important phase of therapy is neglected, recurrent and continued symptoms will obtain.

An endocrinasthenia not only occurs as a result of exhaustion reactions expressed through the nervous system, but is always present as a sequel to every disease process, and more particularly the acute infections. All toxic states exhaust the glands of internal secretion, and the degree of infection and toxemia depends entirely upon the quantitative and qualitative balance of the hormones. That to which we have loosely referred as body resistance is dependent upon this balance.

All toxic assaults upon the body are expressed mainly through the suprarenal glands. The relation of these glands to the nervous system and a brief description of the vegetative nervous system have been emphasized in previous communications by me. Suffice it here to say that a hypoadrenia with a resulting vagotonia is the usual clinical picture following severe infections and psychasthenic states.

In analyzing an endocrinasthenic state preparatory to determining which gland substance to use as a therapeutic measure, it is quite essential to determine the endocrine tropism of the patient, by which is meant that particular gland or glands which normally dominate his body physiology. This is determined quite readily by objective evidence as revealed by the individual's structural makeup, and as I have outlined in previous papers, we are enabled to designate persons in terms of glandular types, recognizing thyroidal, pituitary, gonadal, suprarenal, and thymic types. Many of these may be mixed types, thyrosuprarenal, pituitoadrenal, and other combinations.

An endocrinasthenia invariably begins with exhaustion symptoms expressed through one gland primarily, and subsequently by compensatory efforts, other glands of the chain inject into the clinical picture disturbances produced by their dysfunction, and thus the entire chain may become so fatigued as to produce a generalized endocrinasthenia. It frequently occurs that in this compensatory effort on the part of other glands to aid the exhausted member of the group, one of the compensating glands may become hyperactive and in its overaction produce a chemically perverted hormone. This is always the case in hyperthyroidism (Basedow's or Graves's disease), and here we see an endocrinasthenia complicated by an overactive gland producing a poison which further intensifies and aggravates the original condition. It behooves one in analyzing such a case to determine by a detailed history which member of the group was originally assaulted, and thus sequentially the subsequent glandular dysfunctions created by the primary imbalance may be determined. In supplying the patient with the gland substance to meet the deficiencies of the primarily exhausted gland, the balance may thus be scientifically and accurately adjusted. In profound asthenic states of long standing it is often essential to use more than one gland substance.

By way of illustration permit me to mention a few concrete examples: The following histories are cited very superficially, mentioning only salient points. These are not records of classical endocrine dysfunction states, such as myxedema, cretinism, Graves's disease, acromegaly, Fröhlich's syndrome, etc.; such conditions are readily recognized. Intentionally I have selected histories of the average type of patient, such as one meets daily in general practice.

Each patient was subjected to a thorough clinical combing. Laboratory data as to blood examination, Wassermann tests, uranalyses, radiographic studies, etc., were obtained. In all cases a thorough investigation of the psychic state of the patient was undertaken, psychoanalysis being instituted when indicated. In these citations, for the sake of brevity, the family histories are reported as negative. However, endocrinically, a family history is never thus considered, and frequently much important information from the data obtainable as to the structural and temperamental makeup of the antecedents, as well as the medical history of their diseases, reflects the etiology of the dysfunction trends with which the patient is afflicted.

Case I.—Mrs. B., aged forty-three years; married; one child living and well; no miscarriages; family history, negative; previous history, scarlet fever in childhood. Menstruation began at the fourteenth year, since which time she had always been nervous. The menstrual periods had always been regular but of short duration, scanty and painful. Recently the flow had been becoming more scanty. Since the onset of menstruation she had had severe headaches which either preceded or followed the period. The pain was most severe over the top of the head (pituitary type of headache), and always involved the right half more than the left. Vision was frequently blurred during these attacks. Physical and neurological examinations were negative. Blood pressure was low; systolic never above 120.

This patient was a thyroidal type, i. e., blonde with pink cheeks, blue eyes, fair hair, usually hyperactive mentally and physically. Lately her hair had become gray in spots and very dry and brittle. Her scalp was very dry. The skin was scaly and dry. Large brown pigmented areas (formerly called liver spots or chloasma) developed on the face, neck, and back of hands. These were chromaffin deposits due to compensatory development of skin adrenals. The chief complaints were weakness, drowsiness, continued gain in weight, sluggish action of the bowel. She had many morbid fears and anxieties, and was mentally in a state of unrest due to constant worry. She had been subjected to various therapeutic measures, such as special diets, active catharsis, nerve tonics, and sedatives. To her condition many diagnostic labels had been appended, e. g., neurasthenia, migraine, autointoxication, premenopause neurosis, etc.

She was given thyroid gland, a tenth grain tablet, three times daily for three days, then twice daily for four days, and told to report at the end of that time (one week). She stated upon returning that she had begun to improve in general feeling in forty-eight hours, and at the end of one week she had never before felt so well. Her appearance had so changed as to excite the comment of her friends.

This patient had an ovarian hypofunction, which threw compensatory stress upon her pituitary, thyroid and suprarenal glands. The pituitary hyperfunction at menstrual periods produced the typical pituitary headache, commonly called migraine. The compensatory adrenal function was productive of the development of pigmented areas in the skin due to gradual exhaustion of the suprarenals (hypoadrenia), which in turn created a condition of low blood pressure, while the thyroid in its effort to carry on the endocrine balance also gradually became fatigued with the resulting symptoms of hypofunction as enumerated above. Through the thyroid, which is considered the keystone of the endocrine arch, one may prod into activity the other glands of the series which are sluggish, and that is what was accomplished in this case.

The favorable reaction lasted for several weeks, when it again became necessary to repeat the same treatment for another week. This woman since passed through a normal menopause (I gave her this treatment in 1916). During the first year of her menopause I advised thyroid gland, a quarter of a grain night and morning, for five days before the usual time of her periods. This sufficed to prevent any annoying symptoms. Her state of health has remained normal up to the present time without any further treatment.

Case II.—Mrs. J. R., aged thirty-six years, married six years, no children or miscarriages. Family and previous history have no direct bearing on her condition. Her chief complaint was profound exhaustion, with pain in the legs and back; extreme irritability, outbursts of uncontrollable temper, exciting attempts to do physical violence; very morbid and suspicious. She developed ideas concerning her husband's fidelity which were without foundation. She was so exhausted that she had to spend much of her time in bed. This patient was brought to me in September, 1919, by her physician, Dr. Touart, of New York, who had subjected her to every known method of modern examination. All physical and chemical data were negative. Her blood pressure was 85 systolic. She was thought to be suffering from psychasthenia or probably developing a psychosis of the manic depressive type which her detailed mental history would strongly suggest.

An objective study endocrinically indicated that she was a thyrosuprarenal type. She was first given thyroid gland, one thousandth of a grain, in a glassful of water each day in divided doses for five days, in conjunction with suprarenal gland, two and a half grains night and morning. Improvement began at the end of one week. One month later she was given thyroid gland, one fourth of a grain, ovarian gland, one grain, and pituitary (whole gland), one fourth grain, to be taken three times daily for one week before each menstrual period.

Her physician has reported to me several times since that she has entirely recovered and is enjoying excellent health. I have abbreviated this case report in order to comment chiefly upon the potency of very small doses of endocrine substances. An infinitesimal dose of a gland substance, such as may be administered in dilution over a period of several days, has the remarkable effect of stimulating a homoglandular secretion. By this method a gland which is sluggish may be prodded into activity to a degree which is, to the uninitiated, quite beyond belief; having witnessed the clinical evidence of such reactions innumerable times I am now personally convinced that this method of gland stimulation demonstrates a therapeutic principle which must be seriously considered and not looked upon as a chance reaction or one due to the psychic effect of suggestion. When first noting the effect of this method over five years ago, I was doubtful as to the cause of the results which were frequently obtained so promptly and miraculously as to be uncanny. It appeared that they must be charged purely to a psychic reaction on the part of the patient and perhaps the administering physician as well. However, I have long ago precluded such possibilities over and over again and I firmly believe that this procedure in selected cases is one of great value. When there is a definite gland exhaustion or deficiency, it is necessary to administer larger doses to supply the deficit, but even under such circumstances it rarely becomes necessary to use more than a maximum of one grain of given gland substance a day. Heretofore we have been prone to use doses entirely too large, and thus frequently detrimental in effect rather than beneficial. Before any accuracy as to dose may be safely established it will be necessary for the manufacturers of glandular products to standardize their preparations. The different potencies of the present day preparations, with dosage reckoned by some chemists from the fresh gland substance and by others from the dried extract, leads to therapeutic confusion.

Case III.—Referred by Dr. W. Gilman Thompson. Miss H., thirty-seven years of age; single. Chief complaint, extreme nervousness and spasm of the neck muscles (torticollis). The family and personal history is always of importance in making endocrinic studies, but in this case, as in the others, I shall not burden you with details. Suffice it to say that the early life of this patient was one of good health. She had none of the diseases of childhood, indicating good endocrine function at that time. Menstruation did not begin until the eighteenth year, usually regular, every twenty-five days, but occasionally would skip a period. Headaches began with first menstrual period and always occurred the day before menstruation ceased. These headaches were always on the top and at the back of the head (pituitary headache), due to compensatory effort of pituitary gland. She had grown progressively thinner, and gradually weaker during the past few months. She was irritable, cranky, and unreasonable. This patient was first seen in July, 1919. She had a pulse rate varying from 110 to 125, profuse sweating and shortness of breath, no exophthalmos, and only very slight enlargement of thyroid. Blood pressure average was 125 systolic. The indications here pointed to an overacting thyroid, compensatory to an ovarian dysfunction. She was given ovarian gland in doses ranging up to five grains daily, attention to gastrointestinal hygiene, and occasional doses of strontium bromide. The torticollis disappeared. She regained her normal weight, her pulse became normal, and she had no more headaches. Her nervous symptoms all disappeared and she was again in good health and taking no treatment. It took about three months to effect this readjustment.

Case IV.—Referred by Dr. Charlton Wallace. Mr. A., married twenty-one years, aged forty-eight years. Wife and one child, aged eighteen years, both living and well. This patient had measles in childhood, since which time his health had been excellent until about six months before I saw him, when he began to complain of vertigo, hot and cold flashes, paresthesias, headaches (frontal and top of head), blurring of vision, extreme nervousness, inability to concentrate, emotional instability, phobias, depression, and insomnia. He suffered at all times from an overwhelming sense of fatigue.

The physical and neurological examination was negative. His blood pressure was 165 systolic, and his condition had been attributed to nervous exhaustion complicated by high blood pressure and nephritis; of the latter condition, no evidence was found. Recently, since becoming ill, his weight had increased from 175 pounds to 198 pounds. He had led an exemplary life; had never indulged in excesses of any kind, and never had any venereal disease.

Endocrinically, this man was a thyropituitary type. He was tall, had a very fair skin, formerly smooth but now dry and scaly; white and slightly spaced teeth; very little hair on the body; the pubic hair distribution was of the feminine type; also feminine type of pelvis and small genitalia.

This patient's condition was that of the usual type classified as neurasthenia, and after being submitted to the usual routine methods of treatment, such as rest, change of environment, tonics, baths, and electricity, without any improvement, it became my privilege to subject him to indicated endocrine therapy, and discharge him cured of all symptoms after six weeks' treatment.

The headaches, insomnia, high blood pressure, bradycardia, constipation, and other segmental vagotonic symptoms were due to a compensatory hyperpituitarism, sequential to a physiological hypogonadal state, with associated thyroidal and suprarenal gland exhaustion, both the latter having become fatigued in their efforts to maintain the hormonic balance.

The administration of testicular extract and suprarenal gland substance, with occasional small doses of thyroid, promptly effected an amelioration of all symptoms with a gradual return to normal health. In two weeks the blood pressure was reduced to 140 systolic. This brief treatment administered nearly two years ago sufficed to effect a readjustment which has been permanent to date.

Such conditions occurring in men, particularly of the pituitary type, between the ages of forty-five and fifty-five, are relatively common. We have been prone to consider them heretofore as neurasthenic states due to overwork, a nervous breakdown, but upon analysis I am convinced that these conditions are due to the equivalent endocrine dysfunction disturbances, which the female sex experience during the menopause period. This involutional period in the male is more marked in men whose structural makeup displays evidence of pituitary dominance which creates many feminine characteristics in the male. While the reverse of this occurs in the female, i. e., the woman of masculine type is under dominance of the suprarenals and in her the menopause period is rarely productive of distressing symptoms.

We all possess in varying degrees bisexual traits, psychical (evident or repressed) as well as structural. The many victims of sexual perversions are those in whom there exists inherently an endocrine predominance (gonodal, with either pituitary or suprarenal valencies) creative of heterosexual characteristics. The psychic mechanisms of these pitiable types are purely symptomatic and not etiological factors. The basis of these conditions is a physical one. By psychoanalysis an interpretative symptomatic understanding of themselves may be revealed, but here again to produce the complete and permanent cure, an attempt to effect the physiological hormonic adjustment is essential.

Many histories more theatrical than those above mentioned could be cited, but they are perhaps not as practically illustrative.

Before closing I wish to draw your attention briefly to the subject of the socalled vasomotor neuroses of the respiratory tract, embracing those conditions commonly referred to as bronchitis, asthma, hay fever, and rose cold. I could cite many cases of these types, demonstrating the value of endocrine therapy. The anaphylaxis of pollinosis and ingested proteins is a mild shock reaction. Every anaphylactic or shock reaction produces a hypoadrenia with resulting vagotonia. The emergency therapy for these conditions, as is generally known, is the administration of adrenalin or atropine. Adrenalin stimulates the tonus of the lowered sympathetic and thus effects relief by bringing about the balance between it and the extended vagus, or in using atropine, which is a vagal depressant, the balance is restored in the vegetative nervous system by lowering the vagal dominance and effecting its balance with the lowered sympathetic and thus creating a temporary symptomatic relief. The immunizing procedures with vaccines or sera serve to stimulate selectively the endocrine system to the further production of hormones which are the immunizing barriers of the body, and in this way a transient protective reaction is obtained. All persons who are the victims of anaphylactic reactions present a definite evidence of endocrine dysfunction which is invariably the result of hypoadrenia. Through the proper administration of endocrine therapy the imbalance of the vegetative nervous system may be overcome and its heightened normal tonus maintained, thus effecting a stabilized resistance in those individuals who are susceptible to these distressing symptoms.

Organotherapy has been to me of inestimable value in the treatment of the socalled shell shock patients, many of whom it has been my privilege to treat. This therapy is also equally successful in the treatment of all shock reactions, such as those following surgical procedures and post infection exhaustions. In all disease processes endocrine balance, or body resistance socalled, is always disturbed in varying degrees, and the clinical expressions of this are at all times evident to one versed in endocrine function.

Endocrinasthenia is a factor in every perverted state of body physiology, and in learning to make a practical analysis of endocrine dysfunction and correctly applying therapeutic indications, an asset of inestimable diagnostic and therapeutic value is thus acquired.

REFERENCES.

1. Garretson, W. V. P.: The Dominance of the Endocrines, New York Medical Journal, May 17, 1919.

11 East Forty-eighth Street.

ENDOCRINE EXHAUSTION.

By George Howard Hoxie, A. M., M. D.,
Kansas City, Mo.

The knowledge of the clinical effects of disorders of the endocrine glands has been furthered chiefly by animal experimentation, such as that by Cannon, and by the study of clinical cases, wherein the defects have been congenital. That defects of the endocrine glands are not always congenital seems to me a point worthy of discussion and emphasis. Hence, as briefly as I may, I shall present some argument for this phase of the subject.

The term neurasthenia has fallen into disrepute because of its vagueness and lack of anatomical or physiological definition. But the conception of exhaustion of the elements providing our nervous energy is a good one and worthy of clearer definition. Since the endocrine glands seem to be the source of much of our nerve force it is reasonable to believe that their exhaustion would show itself in a dysfunction of the nervous system, and that this dysfunction might assume much of the symptomatology of neurasthenia.

That these glands do become exhausted has been demonstrated in the physiological laboratories in the case of the suprarenals and the thyroid. The clinician has seen ample evidence of the exhaustion of the ovary. Joslin's statement in his recent article would lead us to infer that there is an exhaustion of the pancreas. Pemberton must depend on the assumption of an endocrine exhaustion for the validity of his theory of rheumatism. Why is it not safe, then, to say that all the endocrine glands may be exhausted and that the real problem is to recognize the causation and the symptoms resulting from such exhaustion in the case of each gland?

That the causes of such exhaustion in the case of the adrenals and thyroid might be simply muscular fatigue, hunger, and exposure was shown amply among our troops who participated in the battles following Chateau Thierry and the Vesle. Our troops also demonstrated that such constitutional disease as influenza had a similar effect. In the case of the ovary we see the woeful effects of too frequent childbearing. Occasionally we find a case in which the cause may be spoken of with some assurance as a direct inflammation of the gland. In diabetes we find often the evidence of a lowering of the threshold of sugar tolerance through an inundation of carbohydrates. In rheumatism the pancreatic function seems to have been weakened by the existence of persistent focal infections. Occasionally we see cases in which the pituitary seems exhausted, although in the case of this gland the influences leading to this exhaustion do not seem to have been portrayed as clearly as in the others. Nor is it easy to reach the pituitary and attach electrodes and thus exhaust it experimentally in animals as Cannon has done with the thyroid.

The symptoms arising in the exhaustion of each gland have not been worked out to the general satisfaction of endocrinologists. One reason for this is that the remaining glands immediately attempt a compensation, so that cases of extreme exhaustion present symptoms which are really polyglandular in type. I have called attention to the cases of exhaustion in which there is present a hyperplasia of the thymus. I would not give the impression that I believe that these conditions are due to the exhaustion of the thymus, but rather that the exhaustion of other glands has called the thymus back into renewed activity; that is, reactivated it. The primary gland exhaustion seemed in some of these cases to be the sex glands, in others the thyroid. The symptoms in these cases were the fatigability of the muscles as opposed to the energy of the mind and will. The blood pressure was either normal or low. The blood picture varied. There was usually constipation and similar troubles.

The symptoms of persistent adrenal exhaustion appear to be vomiting and intestinal hemorrhages, general weakness, insomnia, etc. The white line of Sergent, the dry "thin" skin, the tendency to bronzing of mucosa and skin, are the prominent objective symptoms.

The picture of thyroid weakness is best known. Here there is the sluggishness of mind, of speech, of voluntary as well as involuntary muscle. The thickening of the skin and the pseudoedema give the picture its objective character.

The emotional crises, the hot flashes, the mental confusion where the ovaries have been removed, are too familiar to us to need pointing out. Here the objective symptom is the rapid gain in weight.

The pituitary exhaustion with its lowered vascular tone and general nervous prostration presents a type in some contrast with that of ovarian exhaustion.

Now after reviewing thus hastily the symptoms in endocrine exhaustion let us take the description of neurasthenia as found in one of our standard but briefer textbooks (1).

"Physical symptoms: Insomnia is an early and trying symptom of neurasthenia and nerve exhaustion. Some patients fail to get off to sleep, others wake within an hour or two of retiring to rest and others wake constantly throughout the night. Even the sleep that is obtained is not refreshing. However tired and sleepy a patient feels before going to rest, immediately he gets to bed his brain becomes active. He begins to dread the nights, and frequently sits up reading or spends many hours walking about the bedroom. Hearing seems to be accentuated; every noise worries him. Indigestion is a common symptom, and is usually accompanied by constipation. The neurasthenic complains of 'flutterings' and palpitation of the heart. Sweating and blushing occur readily. The pupils are widely dilated, but there is no lessening of the visual field, as is usually found in hysteria. The superficial and deep reflexes are exaggerated.

"The muscles are in an irritable condition and react readily to slight stimuli. One patient will complain that his legs seems to be always trembling. Others will tell you that the limbs jump as they fall off to sleep. Tremors of the facial muscles are common. In others the body weight falls and two or three stones may be quickly lost. The complexion is anemic and the blood pressure is low. Many of these patients suffer from a nasal catarrh and complaint of a blocking of the nasal passages either when lying or standing or both. The extremities are cold. The most common feature is some disorder of sensation, and in severe cases it is this disordered sensation which so frequently leads to the developing of delusion. Ringing in the ears and the sound of a distant bell are common aural disturbances; and there are visual hallucinations in the half asleep or half awake state (hypnagogic). The headaches may be frontal, or there may be a bruised feeling on the top of the head, or perhaps a dull weight in the region of the occiput. The general nutrition of the body may be good for neurasthenia may develop in an apparently robust individual."

This statement would today be too inclusive and might be called a composite picture of both true nervous exhaustion and various endocrine exhaustions. To illustrate this inclusiveness I give here the case history of a patient with a dysfunction of the ovary.

Case I.—Mrs. A. M. H., aged twenty-nine; dressmaker for fourteen years. Had never been sick enough to be in bed since she had typhoid at the age of fifteen; before that she had had all children's diseases, except smallpox. Headaches began six years ago and were so severe that she fainted away two to three times a day. These lasted for a year, and ceased with marriage. She had one child two and a half years old. The headaches began again, after separation from her husband, in the spring of 1919, and occurred at long intervals. The longest time in bed was three days. She had had no severe headaches recently, but had backaches and slight headaches. She began to wear glasses at sixteen, but stopped wearing them at the time of her marriage. Had never worn them since, and her eyes showed strain. Weight 110 pounds; usually varied from ninety to 110. Slept poorly (difficulty in falling to sleep). Appetite was poor (varied); bowel movement was regular when the patient was not nervous; urinary apparatus findings were negative. Menstrual period had been missed for three months; it had never been regular; had only two to three menses a year. She complained of being melancholy and nervous.

Status: Blood pressure 80-105; both apices slightly dull, increased submanubrial dullness; lungs rough and harsh but no distinct râles; pulmonic valve occasionally showed roughened systole; stomach small and high; pelvis large and contents normal. Lutein, one c. c., injected hypodermically, brought on her menses next day. Urine: acid seventy-five degrees, specific gravity 1.030, indican positive, much epithelium, bacteria and pus cells two plus. Blood: hemoglobin 90 plus, red blood cells 4,720,000, white blood cells 5,400, large lymphocytes thirty, small lymphocytes three, immature five, polymorphonuclears sixty-two, immature three, ripe fifty-nine (neutrophiles).

Lutein was given hypodermically once a day for five to seven days in sequence and repeated monthly. This was sufficient to banish her attacks of wildness, and keep her calm and able to work.

For the sake of contrast I present below the case of a socalled male sexual neurasthenic, in reality a case of chronic vesiculitis.

Case II.—J. C. W., March 12, 1917.—Patient suffered from hypogastric pain on waking. He gave a history of gas for years. Had tried exercises. His best weight was 175 pounds; now 160. The bowel movements were sluggish; liquid petrolatum had been used. Examination was negative except for swollen and tender vesicles. On March 27, 1917.—Weight was 157½ pounds; vesicles boggy. May 12, 1917.—No pain was felt while patient was on starch poor diet; appetite ravenous, and the nerves irritable; weight, 156½ pounds; urine acid 50°, specific gravity 1,026; negative except for pus cells. June 25, 1917.—Patient in fair condition. March 16, 1920.—Patient reported that he had felt tired all the time for one and a half years; got up tired. His appetite was fair, sleep heavy, bowel movements irregular; no indigestion; dull headache by spells with sore spots in occiput. His father quit work while under fifty for similar reasons.

Status: Blood pressure 80-110; pulse 84; temperature 98.6; intrathoracic thyroid or thymus; vesicles swollen; apices dull but no râles; right retina "split" by old scar. Adrenalin, one c. c. 1:3200, raised the blood pressure to 124 and reduced pulse to 70.

March 30, 1920.—Urine 30 degrees acid; specific gravity 1015; spermatozoa and pus cells; weight 154 pounds; lassitude returned; free perspiration. April 6, 1920.—Weight 154 pounds; felt well for three days after vesicular massage; blood pressure 90-95. April 8, 1920.—Blood pressure 80-125, following pituitrin. April 12, 1920.—Pituitrin caused him to feel sleepy; blood pressure 60-100. April 30, 1920.—Good effect of last treatment lasted ten days; felt faint at 4 p. m., but not at 11 a. m. or after midnight; blood pressure 70-108. May 14, 1920.—Weight, 156; blood pressure 78-110. June 1, 1920.—Had become overtired again; blood pressure 85-110; heavy indicanuria. June 28, 1920.—Weight 154½; blood pressure 60-100 (92 some of the time); acidity of urine 80 degrees; heavy indican. July 28, 1920.—Backache returned; blood pressure 70-105 lying, 70-80 standing; phosphaturia. September 12, 1920.—Pain in left hip, tender, to knee along obturator nerve; head of femur tender. Patient had had diarrhea; tonsils were red and swollen; temperature 99.5; pulse 104; vesicles filled and tender.

One might go on with many detailed case histories to illustrate the various points of difference between true neurasthenics and those with endocrine exhaustion, but I believe the two cases reported above are sufficient. The point that I wish to emphasize is that all endocrine anomalies are not congenital, but that many of them are the result of accidents occurring in adolescence and early adult life. If this view is accepted then we must be careful not to consign such patients into the limbo of the incurables and the neurotics. On the contrary, they furnish material for very grateful therapy, provided we analyze the symptoms and secure for each patient the particular help needed.

REFERENCES.

1. Craig, Maurice: *Psychological Medicine,* second edition, pp. 261-262.

INTERNAL SECRETIONS

As Conceived from the Point of View of the Practical Physician.

By D. M. Kaplan, M. D.,
New York.

Since the introduction of practical endocrinology by Dr. Joseph Fraenkel and his school several former conceptions and theories have become facts. It became apparent to us and it will also dawn upon you, that the dead and whatever we may learn from the dead, will only teach us static, unchangeable phenomena. Every organic being, from mouse to man, when dead displays the same degenerative steps, and a protamine from the one is identical with the protamine of the other. During life, however, their dynamic pathways lie in quite different directions, resulting in peculiarities that distinguish the more or less simple existence of the mouse from the very complex life cycle of man. Man is not only to be congratulated that he can think, but that his thoughts have conceived ideas that are attributes of the divine, for he thinks of immortality, and with this conception in view he sees in his offspring a realization of that thought. You will agree with him that we cannot learn anything of therapeutic use to the living man even from a most complete knowledge of the lifeless specimen. The latter never complains, the former always does.

We were shown by our teacher that the minute analysis of functions enables one to approach much closer to the true cause of our patients' complaints than a most scholarly search into his histological anatomy. Do not for a moment believe that I am an iconoclast who advises you to abandon your most esteemed and most scientific static anatomy. On the contrary, for only when you have a clear conception of anatomy and have mastered the most difficult part of it, namely, the anatomy of the nervous system, can you become a true follower of this school, and derive a lasting benefit from its teachings. But the nervous fabric must also be understood in its functional capacity before the information concerning its static entity becomes of use to the student of pathocrine constitutions. This introduction will open your minds to the fact that we are concerned chiefly with functions, in other words, dynamics, and not with lifeless structural anatomy, or statics. I really cannot conceive how even the best anatomist in the world could satisfactorily construct an intelligent histological picture from the encyclopedia of symptoms that a socalled neurasthenic patient complains of. To call his condition functional at once shows the incompleteness of the postmortem, anatomical histological school. Such a patient is never treated intelligently, even if he ultimately recovers, and because of this lack of system and purposeful therapy, endocrine teaching and practice fills a heretofore empty place in medicine, and particularly that branch most important to the patient, namely, therapeutics.

To begin our subject, I wish to emphasize that in pathocrine states we can only hint at the organ that is primarily and chiefly responsible for the many inconveniences that your patient places before you. Moreover, the difficulty increases with the length of the disease. This is caused because endocrine glands do not functionate singly but are most intimately interdependent. Furthermore, each one of them has many more duties to perform than the wisest students of internal secretions are aware of. There are certain endocrines that display their chief activities during certain periods of life, guiding the human being from the cradle to the grave. During infancy and childhood, as you know, the thymus dominates the field of activity, of course, in unison with its associate glands. During adult life the gonads with the rest of the endocrine system come to the front. During old age the adrenals are the chief supporters of life. As these phases of life succeed each other, the endocrine glands change hands, seceding and succeeding each other, so that the thymus goes out when the gonads come in, the latter again pass into latency with old age. When the last bit of work has been accomplished that the adrenals are capable of, the individual dies. From what has been advanced so far I want you to remember that glands with internal secretions are intimately interactive in the performance of their duties. I repeat it here because it is my intention to eradicate from your concept of clinical endocrinology the idea of uniglandular pathocrine states, this being an impossibility.

I will feel satisfied if I have introduced the elementary side of the study of internal secretions and hope that you will remember the following points:

First: Endocrinology is a study of dynamic life in contradistinction to statics.

Second: That no single gland is the culprit in the symptomatology of the complainant.

Third: That each glandular entity has many interacting functions, working in unison with the rest of the glands.

Fourth: They display activities that control the various phases of man's life.

A fifth feature that was not touched upon in the introduction is the use of the terms hyper and hypo function. It is better for the present to abolish such designations and wait until we possess more data which will furnish us with greater justification than we have at present for the use of these terms. We may, however, make use of the word tropism and designate individuals not as hyper or hypo, this or that, but refer to them as the case may be, as adrenotrop, thyrotrop, thymotrop, gonadotrop, etc.

I shall present the more specific attributes of the individual secretions themselves. You will see that the terms and designations used are as strange as seems the entire study of endocrinology. As you will learn, the internal secretions of the glands under discussion belong to the class of enzymes. As such they possess the power to act, as all ferments do, in very small quantities. Abderhalden demonstrated the important fact that extracts of the endocrine glands even when subjected to the action of digestive juices, acids and alkalies retained their power of performing their functions in the same manner as the untreated gland substance. This experiment of Abderhalden's sheds light upon two very important practices of our school of practical endocrinology.

First: Whereas enzymes are very potent substances, therefore, we make use of very small doses, and whereas we are anxious to obtain pure effects, the extract is, as a rule, given in one dose and not repeated until further clinical data have been obtained for the purposes of study.

Second: They are given by mouth as a rule, as they are unaffected by the gastric juices.

THE THYROID.

As a working basis for a tentative therapeusis, our school recognizes the following general departments that are supervised by the various endocrines; the thyroid is recognized as the chief equilibrizer of the human organism and is particularly endowed to maintain equipoise between the endocrines; this gland will respond functionally and even structurally as a result of certain abnormalities elsewhere. Furthermore, the thyroid is responsible for quality in general, such as a bright eye, at one extreme, and a dull eye at the other; fine and abundant hair, then coarse and sparse hair; a smooth skin and a coarse skin; good quality of teeth independent of their position. The position of the teeth is again determined by other glands. This will bring to your minds the spaced teeth of the acromegalic.

THE PITUITARY.

The pituitary, generally speaking, dominates dimension; by that we understand the size of the individual as well as the individual parts of the human structure. Large teeth, large jaws, big hands, or a very tall individual. The opposite is also considered by us as the stigma of a pituitotrop constitution. Another curious function of this gland is the supervision of occurrences that have a rhythmic or periodic quality. As you know, the menstrual event, in so far as its timely occurrence is concerned, depends upon the pituitary. Pathological phenomena that display a tendency to rhythmical occurrences are usually influenced by pituitary therapy; among these are particularly to be mentioned periodic frontal headaches, socalled periodic rheumatic pains, particularly those that are very distressing in the morning and become better later in the day.

THE ADRENALS.

When we speak of the adrenal system, we have before us the chief source of energy, and I take it for granted that you are all acquainted with the work of Dr. Crile, particularly his article on the kinetic drive. All muscular work, voluntary or involuntary, skeletal, visceral or vascular, depends upon the proper supply of adrenal secretion, and during rest it also needs it for the proper maintenance of muscular tone.

The work of the adrenals is so essential to life that Nature distributed little adrenal cachets all over the body. In times of need the organism can collect the necessary force from these for its living requirements. Throughout the vascular system are scattered minute cells, singly or in groups, known as chromaffin deposits; these are no other than small suprarenal glands, and may be found even on the skin and at times on the mucous membranes. From this rather incomplete exposition, you will be able to interpret the significance of the socalled bronzing of the skin and pigment deposit in the mucous membranes, in a case of Addison's disease. It is not accidental, phenomenal, nor unexplainable; it simply means that the chief source of energy in the abdominal depot is unable to furnish what is wanted, hence these little cachets have to take over the function of the central bodies, resulting in a compensatory hypertrophy of these chromaffin deposits, commonly known as pigment. It is not necessary for one to have Addison's disease in order to show these hypertrophic chromaffin deposits. Anyone whose adrenal system becomes injured sufficiently to require help from these widely distributed allies will show an increase in the size of these bodies, with a consequent increase of pigment in these territories. This furnishes a clue to the adrenotrop.

Another department supervised by the adrenals is the color of the hair, its distribution and the time of appearance, together with the complexion of the skin and hair. You will be correct in your interpretation when you designate a blond Andalusian Spaniard as adrenotrop; the same applies to the brunette Swede or the red haired Turk.

THE GONADS.

In speaking of the gonads, you will at once recognize their sexual supervision; they determine the masculinity or femininity of the hands, skin, hair, pelvis, eyes, head, thorax, legs, etc. They insure the preservation of the race, being so endowed by nature and through them the ego of man is conscious of his immortality. You can readily see what misery one would suffer if this consciousness was removed from one as a result of inefficient gonads. Such states as lack of courage, melancholy, suicidal tendencies, dementia præcox, precocious adolescence, and immature senility, sadism and masochism; all of these are possible manifestations in a gonadotrop individual. But a more complex state of affairs prevails when the handicap is manifested by a male body possessing a female soul, and *vice versa.* Here you will have to be very wide awake in order to be able to tell the somatic from the psychic sex, and treat your patient intelligently. As you may know, more than one living man has been cured of his socalled incurable and manifold complaints by a judicious administration of ovarian extract.

I shall now speak of the thymus, which dominates the child's existence during the pregonadal period. During this time the thymus takes part functionally in the hematologic, immunologic and metabolic development of the child. As stated, the supervision of the thymus over the growth of the child stops as soon as the gonads begin to assert themselves functionally. Should the gonads come in relatively late, you will be confronted by an overgrown child; should they come in too early, you will have a precocious child. You can also logically deduct that there are two paths on which such an individual may develop: one, a too late, or too early, gonodal assertion; the other, a too powerful or too feeble thymic influence. It will become your duty to differentiate between the thymotrop and the gonadotrop patient before you suggest the required medication.

I may be of aid somewhat by stating that in case of the gonadotrop patient with a normal thymus, you will find accompanying signs of precocity not only in the gonadal sphere, but you will also detect signs of undue intelligence in the child; on the other hand, where the gonads came in simply because they were not restrained by the thymus as a result of thymic delinquency, the patient will show the early gonadal impulses, this time, however, minus the accompanying development of the psyche.

What has been advanced up to now in my presentation of the subject will most likely be accepted without much antagonism, because it does not antagonize ancient fundamentals of allopathic teaching. If it were not for the fact that I am known as a cog in the wheel of orthodox medicine, I am quite sure that my next remarks would create a storm of protest, and you would ostracize me, but I must confess that I had to travel a very rough and uncertain road before accepting what has formed the nucleus of these remarks. It is needless to say that I exacted much proof before I accepted the truism of the teaching. You may accept it or not, but we of the endocrine school who recognize in Dr. Fraenkel our leader, do not believe that the various infantile infectious diseases are accidental infections, affecting this or that patient in a haphazard fashion. You may or may not have asked yourself the question why the little boy who sleeps with his brother who is sick with measles does not contract the disease, although he was not protected by a previous attack. We do not ask such questions. We know that measles, typhoid fever, diphtheria, mumps, and even syphilis in a patient does not signify that the infection was contracted by some unexplainable accident; on the contrary, we believe that the ability to contract these infections lies in the makeup of the individual. He selects this or that malady, and it is not the malady that selects him. The infectious diseases of childhood determine the tropism of the pathocrine constitution.

The individual who is endowed with a very good thyroid will rarely give a history of a long list of infections during childhood; he will give a history of only having had measles. Individuals who had every infection of childhood with the exception of mumps and diphtheria show that their thyroid is not up to the mark. You all know that the ovaries and testes are affected by an attack of mumps, which proves that the individual who has mumps is a gonadotrop patient. In diphtheria we see an adrenotrop possessor. From all that has been said, you will logically conclude that there is a great difference between the methods of analysis in ordinary practice and the painstaking analysis required in the study of pathocrine constitutions.

A complete study is necessary for a rational and successful therapy, and great selfdenial must be practised in order to forget the therapeutic teachings of the past, such as the continuous medication, as long as the patient calls on the doctor, or the exhibition of the drug three times a day, or the promiscuous removal of tonsils and adenoids, and such other ingrown, very often pernicious, habits.

In the study of internal secretions we have found a sound philosophy which makes relatively clear heretofore obscure states and greatly helps the patient to overcome (and very often in a marvelously short time) complaints of many years' standing. My concluding remarks will only emphasize what has been said before, and I will add that the use of the internal secretions is very ancient practice, having been used by Hippocrates and before him by the Assyrians and Egyptians.

8 West Eighty-sixth Street.

THE CORPUS LUTEUM OF MENSTRUATION AND PREGNANCY.

A Review of a Monograph by John C. Dalton, Jr., M. D.

By W. H. Morley, M. D.,
Pontiac, Michigan.

There is so much discussion even today of the difference between the corpus luteum of menstruation, or as it is sometimes called the false corpus luteum or corpus luteum spuriosum, and the corpus luteum of pregnancy, often spoken of as the true corpus luteum, corpus luteum verum or corpus luteum gravidum, that it will perhaps be interesting to review somewhat at length that excellent monograph on this subject by John C. Dalton, M.D., which was published as a part of the proceedings of the American Medical Association in volume IV of its transactions in the year 1851. This, it will be remembered, was some years before the advent of the *Journal of the American Medical Association*, when the society published its annual proceedings in a volume called *Transactions of the American Medical Association*. This monograph by Dalton is further spoken of as the *Prize Essay*.

In an introduction to his monograph Dalton discusses and reviews the previous literature on the subject of the corpus luteum in a very comprehensive and exhaustive manner. It seems that even at that time there existed a great difference of opinion and a confused idea as to just what the corpus luteum was. For example, Haller (1803) denied positively that corpora lutea were ever found in virgin females. The question of its origin, growth and structures caused a great diversity of opinion. Then there was much debate as to a distinction between the true and false corpus luteum. At the same time there was much discussion as to whether ovulation coexisted with or was dependent upon menstruation. In fact, some authors concluded that the presence of corpora lutea in the ovary furnished incontestable proof that impregnation does exist or has preceded, thus claiming that corpora lutea are not formed at or during the menstrual period. It would no doubt be interesting to give all the different opinions that Dalton enumerates in his review of the previous literature, but perhaps a few of the more important ones will show how diversified the theories were in those early days.

Sir Everard Home, in two different articles which appeared in the *Philosophical Transactions* for 1817 and 1818, denies that there is any difference between the corpora lutea resulting from impregnation and those which result from any other influence, an opinion, by the way, that more nearly approaches the view that is held in our day. Dalton, however, opposes the statement made by Home by declaring that he gives no proof of his assertion, only a very unsatisfactory and confused account of his (Home's) observations. But Sir Everard Home does admit that there is no connection between ovulation and menstruation. This is also a view that is commonly held today.

About 1847, Pouchet published a treatise in which he established the following postulates:

1. That in all classes of mammalia ova are produced spontaneously in the ovaries.
2. That they are expelled spontaneously at regular intervals, independently of coition.
3. That in the human female they are so expelled at each menstrual period, this period corresponding to the rutting season of animals.
4. That the ova are and can be fecundated only after their expulsion from the ovary. Ovarian pregnancy had never been observed in Pouchet's time evidently.
5. That in all probability the part where fecundation usually takes place is the cavity of the uterus or the lower part of the Fallopian tube.

After having discussed and proved these points in regard to ovulation, with which, in the main, Dalton agrees, Pouchet has this to say about the corpus luteum: "Since by these labors the fact of spontaneous ovulation has been demonstrated, it must now be superfluous to point out the futility of the distinction between true and false corpora lutea; they are all produced by the same processes; they have all discharged ova before presenting themselves under the aspect which they assume after that occurrence; and whether the ovule which they have expelled does or does not become fecundated, whether or not it undergoes the transformation into an embryo, all have, nevertheless, the same form and the same structure."

Dalton combats this theory of Pouchet, and states that "the object of the present paper is to show that this conclusion of Pouchet with regard to the corpus luteum is entirely erroneous; that the corpus luteum of pregnancy is different from the corpus luteum of menstruation; and, thirdly, that it may, under ordinary circumstances, be readily recognized and distinguished from it." Dalton, however, admits that the difference to be established between the corpus luteum of menstruation and that of pregnancy is not an essential or fundamental difference, but sums up his method of attack upon this question in the following words: "That the presence of a fetus in the uterus induces certain modifications in the growth and progress of the corpus luteum, by which, during a certain period, we can be enabled to decide with certainty that pregnancy has existed; and that these modifications follow a regular course of progression and retrogression, by which we can estimate, in a proximate manner, the period to which pregnancy has advanced at the time of death." In presenting the necessary facts and arguments, Dalton divides his paper into three parts, viz.:

1. The history and description of the corpus luteum of menstruation.
2. That of the corpus luteum of pregnancy, a comparison of the two, and the differences between them.
3. Observations on lower animals and conclusions therefrom.

PART I. CORPUS LUTEUM OF MENSTRUATION.

Dalton discusses this part of his subject by reporting several cases of young married, unmarried, and widowed women, who came to the postmorten table shortly after death. The ovaries in each case were carefully examined for the presence or absence of corpora lutea. These case reports, or observations, as he designates them, are often illustrated with drawings showing the location and relative size of the yellow bodies. No evidence was found that there was any microscopical examination of the ovarian tissue in these cases.

From these eleven observations, or case reports, Dalton, in his general summary, tries to show that a more or less complete history of the corpus luteum may be deduced. He still clings, however, to the more or less exploded theory that ovulation and menstruation occur synchronously, and states that the precise period, during the catamenial flow, at which the rupture of the follicle takes place, does not seem, as yet, to be definitely ascertained. But he rightly states that shortly after the rupture of the vesicle (follicle) the formation of the corpus luteum commences, and goes on to show quite clearly how this takes place. There is also a microscopical examination of the yellow matter of the corpus luteum, with a short description of the findings. It will be noted, however, that the several stages of growth and formation are lacking. This is, of course, easily explained. It is not from lack of careful examination or from faulty technic, but probably due to the lack of proper apparatus and the fact that cutting and examination of stained sections were unknown in those days. The formation of the lining membranes of the corpus luteum and the origin of its cells, as well as the coloring matter that is later deposited in them, are given and explained, but it should be remembered that these questions are not completely settled today.

Dalton also mentions the fact that at the end of the third week from the close of menstruation the corpus luteum passes into a retrograde condition. He further states the cells of the corpus luteum are a formation destined to produce an oil or oily substance as a gland does its secretion, and that when they have accomplished this purpose they disappear and are replaced by the ordinary fibrous tissue of the ovarian stroma (the corpus albicans of today).

PART II. CORPUS LUTEUM OF PREGNANCY.

Here, as in Part I, Dalton reports several cases or observations, seven in all, of pregnant women whose organs he had occasion to examine at autopsy. In this series, a careful macroscopic examination of the uterus and adnexa was made. The ovaries were closely scrutinized, both before and after they were sectioned, for corpora lutea, and the findings recorded.

At the outset Dalton states "that in the first periods the corpus luteum follows the same course of development, whether the discharged ovum becomes impregnated or not. When, however, the ovum becomes impregnated and continues its growth in the uterus, the corpus luteum, instead of reaching its maximum of development at the end of three weeks and afterward undergoing a rapid process of atrophy, continues to develop itself for a considerable period and does not, in fact, become very decidedly retrograde until after the termination of pregnancy." This last statement is now known to be erroneous, as the socalled corpus luteum of pregnancy reaches its highest grade of development about the sixth month of pregnancy, and from that time it begins to retrogress until at the end of pregnancy it has become hyaline or changed to a corpus albicans. Dalton is also in error in another statement that he makes in this connection, when he says that the ordinary periodical processes of the ovary are suspended, or, in other words, that ovulation does not take place during pregnancy. This, we now know, is not so, for, witness in the case of twin pregnancies, there may be a fertilization of two different ova. It has also been demonstrated that this fertilization of two different ova may take place not only at the same time, but within several weeks of each other.

Dalton sums up his findings in his eighteen observations, or case records (eleven cases reported on the corpus luteum of menstruation and seven on the corpus luteum of pregnancy), in the following conclusions:

1. It (corpus luteum of pregnancy) arrives more slowly at its maximum of development and afterward remains for a long time as a very noticeable tumor, instead of undergoing a process of rapid atrophy.
2. It retains a globular or only slightly flattened form, and gives to the touch a sense of considerable resistance and solidity.
3. Internally, it has an appearance of advanced organization, which is wanting in the corpus luteum of menstruation.
4. This gives the difference in the thickness of the convoluted wall of the two corpora lutea as an evidence of their difference and, hence, a point in their differential diagnosis.
5. The color is not, by any means, so decided a

yellow, but a more dusky and indefinite hue in the corpus luteum of pregnancy.

6. If the period of pregnancy is at all advanced, it is not found, like the corpus luteum of menstruation, in company with unruptured vesicles in active process of development.

PART III. OBSERVATIONS ON ANIMALS.

In this last part of his memoir Dalton reports eight observations on beef and sheep ovaries. The material for his examinations was obtained from recently slaughtered animals. The author makes the same careful and exhaustive macroscopic examination as he did in the human subject, and reports his findings.

In his conclusions on this branch of his work, Dalton remarks that in a general way the formation of the corpus luteum in cattle and sheep is similar to that which takes place in the human female. The difference, if any, is only in some of its minor details. He does say, however, that the difference in aspect between the corpus luteum following an ordinary ovulation and that which accompanies pregnancy is not so striking in the cow as in the human female. He found this slight difference to obtain also in sheep.

These are the main points of interest found in this excellent memoir, written nearly seventy years ago and nearly forty years before the ovary was considered as an organ with an internal secretion. Four excellent colored plates accompany this memoir. While there might be a chance for criticism in the fact that his observations in each division of his article were too few in order to draw any logical conclusions, still, with the methods of study at his command in 1851, Dalton produced an epoch marking monograph. There are today too few clinical observations made upon the endocrine glands in general and upon the ovary and corpus luteum in particular, and by clinical observations are meant those that are closely followed and checked up by careful and painstaking microscopical examinations.

TWO REMARKABLE CASES OF TESTICLE IMPLANTATION.*

By G. Frank Lydston, M. D.,

Chicago.

Case I.—Hypopituitarism in a subject thirty-four years of age; occupation, drygoods clerk; referred to me with a view to testicle implantation. Feminine secondary sex characteristics were well marked; patient was beardless; axillary and pubic hair was very scanty. Subject was badly nourished and psychically much depressed. The development of the sexual organs was about that of a child one year of age. No sexual activity ever had been experienced. The patient was so inefficient, mentally, physically and sexually, that, as he expressed it, life was not worth living. He was employed in the store of a relative largely because of compassionate interest. The voice was markedly falsetto.

After a careful examination of the patient I declined to operate because of its apparent hopelessness, his age seeming to me to be an unsurmountable obstacle to success. At the earnest solicitation of the patient and his family, and with the statement upon my part that there practically was no hope of benefit to be derived from operation, I did a left scrotal implantation of a single testicle upon this patient on December 12, 1919. I used material taken from a subject eighteen years old, dead of skull fracture. The gland was removed twenty-four hours after the death of the donor and refrigerated for thirty hours. Primary union took place and the patient was up and about with suspensory on the tenth day.

Considering the age and other circumstances, the effects of implantation in this case were astonishing. Marked improvement in the nutrition and general health of the patient was evident within a few weeks. His color improved and he became cheerful. There was an increase of eight pounds in weight. Within eight weeks after implantation the patient complained of frequent and violent erections, and some days later indulged in coitus, repeating the act at various times thereafter.

Since the operation there has been a marked increase in the growth of the axillary and pubic hair, and the patient now is compelled to shave weekly, an entirely new experience for him. His mental and physical efficiency so greatly increased after operation that several months ago he entered the drygoods business for himself. There has been a perceptible, although not marked, change in the timbre of the voice. The testes have greatly increased in size, as is true of the penis. Four months ago the patient married and has sustained the marital relation satisfactorily to both parties to the act. Orgasm and emission both are experienced. Conditions still are improving.

In my opinion, the result in this case will be permanent because of the marked development of the patient's own testes. There is a decided difference in this respect between cases such as the foregoing and the second one which is reported below.

I now have had sufficient experience with such cases as that just described to warrant the statement that none of these patients when operated upon by sex gland implantation will fail of excellent results under reasonably favorable conditions. It is my belief that practically all, if not all, such subjects, if operated on, at or about the usual age of puberty, can be taken through puberty and will show sex development, with corresponding secondary masculine sex characteristics approximating the normal more or less closely.

Case II.—Referred by Dr. E. Wyllys Andrews, of Chicago. Patient, thirty-six years of age, had suffered at the age of thirty the loss of both testicles, which were removed by the late Dr. John B. Murphy for tuberculosis. Following the loss of the testes came the loss of the beard, the acquirement of a large quantity of flabby feminine appearing fat, with a marked change in contour of the hips, and the voice markedly altered. Associated with this acquirement of feminine secondary sex characteristics was mental and physical inefficiency, with practically complete loss of sexual power.

Two years ago I did a double implantation upon this man, but because of rather defective material and the large amount of scar tissue in and about the scrotum, the result was not satisfactory, although there was considerable improvement in the patient's condition. Ten months later (December 23, 1919), I reoperated, using a single testicle taken from a subject sixteen years of age, dead of contact with a live wire. This was planted in the left scrotal region. The patient was up and about at the end of twelve days. A report two weeks ago stated that he was in excellent condition, physically, mentally, and sexually. I have before me a copy of a letter from the patient to Dr. Andrews, dated October 2, 1920, in which he says: "Since the operation I have enjoyed a decided physical improvement, with a loss in weight of twenty-six pounds, disappearance of the nervous condition, and pronounced sexual improvement."

---

*Patient exhibited before Chicago Medical Society, October 13, 1920.

As to the permanency of cases like the foregoing, I beg leave to submit that even where, after a greater or less interval, a repetition of the implantation is demanded, the operation is still a great step in advance in the treatment of a class of cases hitherto regarded as hopeless. One of the remarkable features of the case under consideration is the age of the patient and the length of time that had elapsed since his own testes were removed. There is no question in my mind as to the uniform success of a properly performed implantation in such cases when performed at a reasonably early period after the loss of the patient's own glands. I am convinced, also, that by implantations performed at varying periods the results can be sustained indefinitely.

25 East Washington Street.

THE ROLE OF THE ENDOCRINE SYSTEM IN INTERNAL MEDICINE.*

By A. S. Blumengarten, M. D., F. A. C. P.,
New York,
Associate Attending Physician and Chief of the Department of Endocrinology, Lenox Hill Hospital.

The endocrine system has been attracting the attention of the profession with a constantly increasing interest. Indeed this interest has grown to such an extent that a great many men have given the endocrine system the most important rôle in the entire field of medicine. The conditions and diseases for which the endocrine system has been held responsible are legion. I shall attempt in this brief paper to present this phase of internal medicine from a rational viewpoint and try to get away from the rather enticing explanations that a sympathetic feeling for the glandular system develops. I shall not attempt to present endocrinology as a new specialty because the number of cases of evident lesions of the internal secretory glands are comparatively few and quite easily recognized. Endocrinology properly belongs to internal medicine, of which it constitutes only one, but a very important, phase.

If we attempt to analyze the causes for the growing interest in endocrinology, we find it is the natural outcome of the perplexing and frequently insoluble problems with which the thinking physician is confronted in his daily practical contact with diseases. In the first place, every physician who has spent any time with the definite endocrine diseases learns to appreciate readily that these diseases occur in minor forms which frequently pass recognition, the socalled formes fruste. Furthermore, when these formes fruste are recognized and definite endocrine lesions carefully studied it becomes quite apparent that many of the symptoms of these glandular syndromes coincide with the symptoms associated with other well known diseases. But only the symptoms referable to other viscera are prominent. For example, various gastric diseases characterized by disturbance in the gastric secretions are associated with numerous other symptoms which coincide nicely with symptoms of disturbances of the thyroid gland. But it is the gastric disturbance that stands out prominently in the clinical picture, and the other symptoms which are usually not apparent constitute a well defined endocrine syndrome, such as hyperthyroidism, for example. Consequently the more we study these cases the more we begin to appreciate that the gastric syndrome is only one part of the picture of an endocrine disturbance and is not an entity in itself.

The more we are confronted with the phenomena of disease the more we appreciate that extraneous factors, bacteria, irritants, etc., play only one rôle in abnormal biology. The individual himself also plays an important rôle in combating these extraneous factors. All our studies in the past have been devoted largely to the mechanism and biology of these extraneous causes of disease, but it has long been known that individuals varied markedly in their susceptibility to the same irritant. We have explained the rôle of the individual by the terms susceptibility or resistance. Yet it is apparent that the resistance of the individual is a very complex mechanism for which there are manifold explanations. It was the physicians of several centuries ago, indeed even Hippocrates and Galen, though comparatively ignorant of the rôle of the extraneous factors, who appreciated the important rôle the individual plays in the mechanism of disease. These older physicians appreciated that certain diseases affected particularly certain races and characteristic types of individuals and so they classified individuals into various types according to their anthropomorphic characteristics. And they laid much stress upon the type of the individual in each disease. Indeed before the advent of physical diagnostic methods such as auscultation and percussion and our other modern methods it was these observations that stood them in good stead in a diagnostic, prognostic and even therapeutic way. Today this keen clinical observation of the physical and mental characteristics of the individual is getting to be a lost art, though if one develops the sense of observation one appreciates that the facts that the older physicians knew so thoroughly still hold good today. The mental characteristics of individuals afflicted with certain diseases have long been known. Witness the hopefulness of the tuberculous, or the choleric temperament of the gouty. We can, however, call to our aid the facts that modern medicine has developed to supplement these observations and to interpret them in a more scientific way.

---

*Read at a meeting of the Hunterian Medical Society, February 3, 1920.

When we attempt to explain the evident fact that certain individuals are more resistant to various diseases than others, that some individuals are more susceptible than others, we find, what has not been appreciated, that the specific affinity of disease is for individuals with more or less the same peculiar anatomical and psychical character. These distinctive markings may be racial in character, anatomical, or they may be characterized by variations in the physiology and psychology of the individual. Consequently in the physical examination of individuals we should not only look for the physical signs of a lesion but we should also attempt to recognize clinical types. If, however, we study these types in the light of what we know at the present time about the function of the endocrine system we find that they bear a relationship to the physiology of the endocrine system. It is well known that the endocrine system plays the most important rôle in the development and growth of the individual. Consequently, whatever peculiar racial, anatomical, physiological and psychological characteristics are evident, they are the result of the completed physiology or the persistent control of the endocrine system. Furthermore, the work of A. Marie (1), Garibaldi (2), Koopman (3), Rohdenberg (4) and others seems to indicate that the individual's susceptibility or resistance is intimately dependent upon the function of the endocrine system. Consequently modern medicine looks upon the endocrine system with a hopeful and more beneficent attitude for the explanation of the individual's rôle in disease.

The greatest advances in modern therapy have been along the lines of organotherapy. Moreover, the efficacy of organic substances is unquestionable when they are used in definitely indicated conditions. No one denies the therapeutic effects of adrenalin, thyroid extract or pituitrin. They give results, and with the exception of irrelevant variations the effects produced by these preparations are definite. This is more than can be said for a great many medicinal substances, many of which have been used for centuries and have withstood the varying explanations for their supposed effects. In spite of which, however, many of them are no more efficacious today than they ever were. It is the therapeutic hope engendered by the definite effects of some of the known endocrine substances that is also focusing our attention more and more upon the glands of internal secretion for the means of explanation for many phenomena of diseases as well as for therapeutic aid.

Unfortunately when one develops an interest in endocrinology it opens up hopes, possibilities and theoretical explanations of biological phenomena which are indeed fascinating were they only subject to proof. And one is soon led by these ideas into a maze of emotional concepts among which the endocrinologist soon smokes the pipe of endocrine hashish and substitutes mental gymnastics, wishes and feelings for facts.

I shall not discuss in this paper the list of diseases of the endocrine system that are known to be due to disturbances in the endocrine system. They are all familiar to most physicians and can be readily found in any standard textbook, and to describe them here is beyond the scope of this paper; besides, it would be useless repetition. I shall attempt, however, to present the bearing that the endocrine system has upon many internal diseases and particularly as a basis for endocrine therapy when this can be carried out. I realize, however, that we are still in the pioneer stage in this subject and we have only a few definite reliable axioms to guide us. Nevertheless I feel that the proper application of those facts that we already know may be utilized to enable us to recognize the rôle that the endocrine system plays in various medical diseases, and in doing so to treat them occasionally by organic substances.

Perhaps the most important reason for recognizing an endocrine disturbance in any disease is for the purpose of treatment by glandular substances. I believe that at the present time rational endocrine therapy is substitution therapy. We can only treat diseases or conditions by glandular substances when we are able to recognize the deficiency of one or several glands of internal secretion. We can obtain the proper organic substances and can supply this deficiency by oral, subcutaneous or even intravenous administration. The treatment seems simple, but it is not so easy to carry out practically, since it is often extremely difficult to recognize glandular deficiencies by clinical or laboratory means since frequently deficiency of one or several glands may be masked by compensatory function in other glands. Therefore to determine the deficiency in the function of the various glands from the clinical and laboratory point of view is the whole problem in establishing the rôle of the endocrine system in any disease or condition. Naturally this would be simple if we had the quantitative or qualitative method for determining each specific hormone in the blood. And when we found such a deficiency all that would be necessary to do would be to administer the proper preparation of this deficient hormone or autocoid and presto the disease would be cured. Unfortunately, however, this is a vision of the future which may or may not be a mirage. Nevertheless optimism and enthusiasm are helpful; for by keen, careful clinical observation and the study of the types of individuals from an endocrine viewpoint we are frequently able to recognize clinical signs of deficiency of specific endocrine substances and then we may supply these substances therapeutically.

In order to be able to properly interpret various clinical phenomena in the function of the glands of internal secretion we must abolish certain commonly accepted conceptions in regard to glandular disturbances. The endocrine glands do not function individually. They act as a system just as the circulatory or digestive system does. When a disturbance of one of the endocrine glands occurs resulting in deficiency in its hormone production or secretion, this deficiency, provided it occurs to the extent of actively interfering with the function of the system, will be compensated for by one or several of the other glands. Now it is a biological axiom when one organ compensates for another that this compensation occurs to excess. Indeed, the ability to produce artificial antitoxin and immune sera is dependent upon this fact, for if this were not the case only enough immune serum or antitoxin would be produced in artificial immunity, for example in the production of diphtheria antitoxin in the horse, to neutralize the injected toxin. But it is the excess that we are after. The same principle can be demonstrated in pathological physiology; note the compensatory hypertrophy of the heart in valvular disease or the hypertrophy of the stomach in pyloric stenosis, and this principle can also be applied to endocrine conditions. For example, when we have evidence of overactivity of one of the endocrine glands it may be merely the evidence of excessive function in an effort to compensate for the deficiency of one or several other glands. For instance, in hyperthyroidism with evident deficient sympathicotonia, the deficient sympathicotonia is evidence of deficient adrenal secretion. The effort is made to compensate for this deficiency by hypertrophy and overactivity of the pituitary. But if the pituitary is tightly enclosed in the sella (as Timme has shown in a number of cases, and which can often be demonstrated in röntgenographs of the skull), the failure of the pituitary to supply the demand made upon it throws the compensatory work on the thyroid which then secretes to excess and we then get the syndrome of hyperthyroidism. Feeding such a patient pituitary extract often clears up the hyperthyroidism because it supplies the call for pituitary hormones. Furthermore, the reciprocal action of the thyroid and pituitary, both experimentally and therapeutically, in selected cases, is one of the few definitely established facts in endocrinology.

Careful study of the definite endocrine lesions such as those of the thyroid gland, the pituitary and others, demonstrates that the well known syndromes resulting from disturbances of these glands are accompanied by numerous well defined subjective and objective phenomena. Now, since we get definite syndromes when the function of these glands is disturbed, is it not likely that there may also occur slight disturbances in the activity of these glands? These may manifest themselves by only a part of those subjective and objective phenomena which usually occur in the well defined frank, endocrine syndrome. Furthermore, the various symptoms in any syndrome of a definite endocrine disease differ in their intensity and frequency. For example, hyperthyroidism may occur without exophthalmos; it may occur with or without diarrhea; it may occur with or without tremors. Or, on the other hand, in one case the gastric symptoms may predominate, while in another the tachycardia may predominate, and so on. Consequently, patients may come to us complaining of only a few symptoms of an endocrine disturbance. Or they may complain of all the symptoms of disturbance of one of the endocrine glands in which one symptom dominates the picture while other symptoms may not be evident at all. Besides, this domination of some symptoms over others may occur with very few of the usual signs of endocrine dysfunction, and consequently the endocrine cause of the condition is lost sight of entirely, and the patient is apparently suffering from some other visceral disturbance, for example, from a gastric disturbance, from a nervous condition, or from a cardiac disturbance. If, however, we bear the possible endocrine etiology in mind in such cases, we may be able to correlate both the subjective and the objective findings into a definite endocrine syndrome which we can then treat rationally and often with great success. And if this syndrome is one resulting from deficient secretion of one or several of the endocrine glands, we may supply this deficiency by a proper preparation of the gland in question and often with brilliant results. One must be careful, however, even if objective phenomena of an endocrine disturbance are found in conjunction with the subjective symptoms, in the interpretation of the causative rôle of the glandular disturbance in the disease under consideration. The endocrine disturbance may not be the cause of the condition, but at any rate it probably plays an important rôle and treatment on that basis may still be extremely beneficial.

The endocrine glands have a protean effect on the physiology of the individual. They influence the working of his nervous system, both central and peripheral; they regulate metabolism, and they play an important rôle in immunity. In their relation to the nervous system it is, of course, difficult to determine which is the cause and which the effect. Does the nervous system regulate the endocrine glands, or do the endocrine glands influence the nervous system? This is, of course, difficult to determine, and the ideas usually accepted in this regard are dependent upon one's interest and enthusiasm. The neurologists believe the nervous system is the most important, while those interested in the endocrine system believe the reverse. Practically, however, I think we can accomplish more therapeutically by assuming the endocrine glands to be the cause and the sensitizers of the nervous system rather than the reverse.

We can accomplish a great deal with organic therapy if we study our suitable cases along endocrine lines, but how shall we do this? We know that definite glandular disturbances, such as hyperthyroidism, dyspituitarism, and various gonadal disturbances are accompanied by various clinical manifestations, both subjective and objective, of disturbed function of the nervous system, of the vascular system, of metabolism, of immune reactions, of sugar tolerance, of susceptibility to various illnesses. Furthermore, these disturbances give definite objective clinical evidence and certain definite laboratory reactions. Besides, the hereditary characteristics, both in regard to susceptibility to disease, anatomical characteristics, etc., are fairly definite. Consequently, if we find the same clinical evidence, both subjective and objective, in any disease that we find ordinarily in the definite endocrine disturbances, or in the formes fruste types, we have a right to assume that the endocrine system plays an important rôle in this disease. And then we must attempt to determine if the endocrine disturbance is the cause of the symptoms. This can frequently be done, and we may then treat the condition along endocrine lines with great benefit. For example, it is well known that hyperthyroidism is characterized by tachycardia, exophthalmos, twitchings, diarrhea, increased basal metabolism, pupillary disturbances, and other symptoms. The presence of all of these symptoms or of several of them in varying combinations in a patient suffering from another disease would seem to indicate that the disturbed thyroid plays an important rôle in this disease and may even be the cause of it. On the other hand, myxedema is characterized by the occurrence of fat pads, drowsiness, sluggish mentality, and lowered basal metabolism; Addison's disease by asthenia, low blood pressure, Sergent's white line, etc.; pituitary disturbances by the syndrome of acromegaly or by Froehlich's syndrome. Consequently, when the symptoms and signs characteristic of these diseases occur in a patient apparently suffering from something else, we have a right to believe that the disturbance of these glands plays an important rôle, or may even be the cause of the patient's condition.

In various infections we frequently have evidence of a disturbance of several of the endocrine glands, and it is this injury to the glands which profoundly influences the prognosis and often at the same time may be a very useful guide in treatment. For example, in typhoid fever the occurrence of tympanites, profound asthenia, low blood pressure, and of Sergent's white line, can frequently be demonstrated together. This syndrome in typhoid fever may usher in a serious complication and in any event indicates a bad prognosis. Such a condition was always considered as evidence of a vasomotor paresis or even paralysis. But it seems much more likely that this merely indicates injury to the adrenals with resulting adrenal insufficiency. The same condition may frequently be demonstrated in any infection, particularly in pneumonia and in rheumatism, and in the recent influenza epidemics, where clinical experience has demonstrated that these symptoms, together with profuse perspiration, were always a serious omen. In the numerous autopsies performed in the army on patients dying from influenza, degeneration of the adrenals was usually demonstrated. Tympanites, for example, is always a bad omen in any infection, and nothing relieves it so quickly and so definitely as the hypodermic injection of pituitrin, the endocrine substance depending for its effect upon the chromaffin tissue from which it is made.

In establishing clinical evidence of associated disturbance of one or more of the glands of internal secretion, it is frequently impossible to differentiate the socalled hyperactivity or hypoactivity, because both conditions of one gland may occur at one and the same time. Furthermore, we know that various infections are followed by specific visceral and glandular lesions. Influenza, diphtheria, and tuberculosis injure the adrenals, mumps the gonads, etc., and the injury may be more or less permanent. We, therefore, may find on careful physical examination indelible evidence of a specific glandular dysfunction as the result of previous infections. Again, since the endocrine system works as a whole, we may have manifestations of hyperactivity of one gland synchronous with hypoactivity of another. Or evidence of hyperactivity may subsequently be changed by the autogenous attempt to overcome it into hypoactivity, or *vice versa*. For example, in long standing cases of exophthalmic goitre or hyperthyroidism, the patients may improve spontaneously to such an extent that the characteristic symptoms of myxedema may develop. This is merely Nature's effort to overcome the hyperthyroidism which she does to excess, probably by the production of fibrosis in the thyroid gland, and this excess manifests itself in the appearance of myxedema.

Viewed in the light of endocrine relationships such an apparent marvel in diagnosis as the determination of the fact that an individual with evident gonadal stigmata has had mumps, even before he is examined, or that an evident Froehlich type individual has undescended testes, loses its mystery because it is merely the practical application of well known gonadal stigmata, specific bacterial affinities, and the endocrine relationships.

The symptoms of hyperactivity or hypoactivity cannot always be differentiated; since both may occur simultaneously, it is better to regard these symptoms of disturbed glandular activity occurring in any individual as stigmata indicating merely disturbed function of those glands which are usually characterized by those symptoms. The finding of these stigmata in any other disease in addition to subjective and laboratory evidence, is the basis upon which we have a right to assume that the endocrine glands play a causative or associated rôle in the disease. But merely finding these stigmata does not establish the causative rôle. This can only be determined by careful study of the case and by good clinical judgment. If these stigmata are of such a character and occur to such an extent that they indicate directly or indirectly a deficiency of one or several of the endocrine glands, we are often able to profoundly influence the condition by supplementing this deficiency in hormones.

The presence of these stigmata in individuals is definitely recognized even in those who do not suffer from any illness at all, and they are present in many individuals in the form of anatomical, physiological, or psychical markings. Indeed, there are very few individuals whose endocrine system is so perfectly balanced that there are no stigmata showing dominant activity of one gland over another. Indeed, the personality, the talents and tastes of the individual are probably intimately associated with his endocrine system. We know, for example, that the endocrine glands play an important rôle in metabolism, and the individual's appetite is, therefore, dependent upon his metabolic index. And thus we may go on and find numerous stigmata in each individual. Nor should we consider the stigmata as a sign of degeneration or disease, for they merely indicate the domination of one endocrine gland over others, and since they play a very important rôle in the development of the individual they leave indelible and permanent markings in physiognomy, in anatomical structure, in psychology, and in physiology. And I might say with a touch of endocrine phantasy that we owe a great deal of progress to endocrine derangement. For example, many men and women successful in various lines show definite stigmata of an unbalanced endocrine system. Great musicians show characteristic pituitary stigmata, as do also successful financiers. They have voracious appetites, a great meat eating tendency, and a rather active genital system; consequently they are prone to gout and syphilis.

For practical clinical purposes, therefore, we may group the symptoms characteristic of each endocrine syndrome merely under the gland in connection with which they occur, irrespective of whether they indicate hyperactivity or hypoactivity. These symptoms, which we may call stigmata, may be used as indicators of the specific glandular influence. We can thus develop guides for organotherapy, but again the determination of whether the glandular disturbance is the etiological of the associated factor depends upon the general clinical consideration of the case and good clinical judgment.

THYROID STIGMATA.

Symptoms of Socalled Hyperactivity.

Exophthalmos
Wide palpebral slits
Tachycardia
Nervousness
Tremors
Stelwag's sign
Von Graef's sign
Anginoid attacks
Hyperidrosis
Deformities of the nails
Dryness of the mouth
Excessive salivation
Vomiting attacks
Diarrhea
Hourglass contraction of the stomach
Irregular breathing
Scanty and frequent menstruation
Emaciation
Periodic loss of flesh and strength
Mild hyperthermia
Increased basal metabolism
Lymphocytosis
Eosinophilia
Increased coagulation time
Increased emotional irritability
Ideas of reference and persecution
Manic symptoms
Bluish white teeth
High hair line

Symptoms of Socalled Hyposecretion.

Precocious graying of the hair
Drowsiness
Anorexia
Small stature
Puffiness of the face
Sallow complexion
Scanty hair
Deep set eyeball
Dull and listless cornea
Hard, brittle nails
Scanty eyebrows
Cold, bluish, moist hands
Tendency to chilblains
Irregularly developed teeth which decay easily
Defective development
Dry, thick, scaly skin
Acrocyanosis
Localized transitory edema
Urticaria

PARATHYROID STIGMATA.

Intermittent cramps
Twitchings of the hands
Tetany with associated symptoms

PITUITARY STIGMATA.

Greatly thickened nose.
Prominence of superciliary ridges
Tendency to increased tufting of terminal phalanges
Coarse, heavy, overhanging eyebrows
Protruding thick lips
Prominent hypertrophied lower jaw
Increased interdental spaces
Enlarged sella turcica
Hypertrophied, thickened skin
Hypertrophied nails
Short, square hands
High carbohydrate tolerance
Amenorrhea
Visceroptosis
Increased sugar tolerance

Socalled Deficiency Symptoms.

Adiposity
Fat pads around the malleoli
Increased development of the mammary glands
Deposits of fat around the buttocks and the neck
Alabasterlike skin
Irregular menstruation
Subnormal temperature
Wide intercostal angle
Slow pulse
Sluggish mentality
Mononucleosis
Eosinophilia
Leucocytosis
Short stature
Childlike voice
Bitemporal headache
Supraorbital headache
Fatigability
Sterility
Infantile uterus

ADRENAL STIGMATA.

Aggressive type of individual
Increased growth of hair on body
Masculine type of female and vice versa
Prominent canine teeth

Socalled Deficiency Symptoms.

Asthenia
Low blood pressure
Muscular pains
Fatigability
Pigmentation
Sergent's white line

THYMUS STIGMATA.

Very long stature
High palatal arch
Infantile epiglottis
Lymphocytosis
General glandular enlargement
Abnormally long thorax
Visceroptosis
Eosinophilia

GONADAL STIGMATA.

Hermaphroditism
Pale, anemic, waxy skin
Flushes in the female
Scanty growth of lanugo-like hair
Sparse eyebrows
Dull, lethargic mentality
Characteristic pyramidal pubic hair in males and flat in females

Symptoms of Socalled Gonadal Hyperactivity.

Precocious sexual activity
Jolly, gay disposition
Marked fecundity
Menorrhagia or metrorrhagia

Symptoms of Socalled Hyposecretion.

Infantilism
Small atrophic testes
Late menstruation
Menorrhagia
Dysmenorrhea
Infantile uterus
Nervous constipation
Deficient lateral incisors
Sterility
Absent lateral incisors

PINEAL STIGMATA

(*Occur only in children*)

Precocious sexual and mental development.

The study of the various stigmata shows that many of these are present regularly in certain types of individuals. Consequently we may group individuals from an endocrine viewpoint into various types according to the prominent endocrine stigmata which they show. For example, the nervous, thin individual with tachycardia, rather prominent eyeballs, fine, delicate hair, suffering occasionally from gastric symptoms, suggests the thyroid type, as does also the cleancut, alert individual, and the young woman suffering with amenorrhea and a tendency to obesity and lethargic mentality. On the other hand, the aggressive, energetic individual with the history of an ancestry subject to vascular disease, with high blood pressure, with abundant, unusual distribution of hair and a tendency to pigmentation, suggests the adrenal type. And so does the tired asthenic individual with low blood pressure and Sergent's white line, who may have had influenza or diphtheria and even may be suffering from tuberculosis. On the other hand, however, the heavily built individual with broad, large frame, wide intercostal angle, broad nose, prominent supraorbital ridges, prominent lips, large, square fingers, suggests the pituitary type. These individuals are very fond of meats, are heavy eaters, and are constantly subject to diseases of a gouty nature, may have a history of syphilis, are often musical and, as a rule, are usually successful in their particular community. I am merely indicating the more common types. Even with our comparatively indefinite axioms that we have at the present time we may nevertheless group individuals into types as I have indicated according to the gland which dominates the physiology of the endocrine system, and of which they, therefore, show stigmata in their physical, mental, physiological, and immunological makeup and in their ancestral history.

The dominant gland in this discordant endocrine system may be responsible for the anatomical stigmata, the personality and the traits of the individual. But at the same time these anatomical stigmata may explain why they react to extraneous irritants in a different manner from other individuals, and why some individuals are immune to certain diseases and extraneous factors while others are not.

The relationship of the endocrine system to immunity is perhaps the most important rôle that the endocrine system plays in medicine. Absolute scientific data demonstrating this point is thus far not extensive. But the evidence is rapidly increasing, and it seems that the adrenal glands play one of the most important rôles in this regard, as is shown by the work of Koopman (3) and the recent work of Rohdenberg, Bernhardt and Krehbeil (5) in regard to the value of sugar tolerance. In the experimental removal of the various endocrine glands and combinations of glands they found that the sugar tolerance was not of much specific value. The only constant effect was the relationship of the immune reactions to the endocrine removed and the initial blood sugar percentage without the injection of a definite amount of glucose.

Clinically we have ample evidence to show the important rôle of the endocrine system in disease. The susceptibility of cretins and myxedema patients to disease is well known, and if we look at the infectious diseases from the viewpoint of endocrinology the rôle of the endocrine system is also evident. The patients who do well in any infection show the clinical picture of sympathicotonia or of hyperthyroidism. On the other hand, patients that do badly show symptoms of sympathetic paralysis such as asthenia, tympanites, and low blood pressure. While this is usually explained as a vasomotor paresis or paralysis, I believe it is much more rational to consider the symptoms as manifestations of the activity of the great sympathetic sensitizers, namely, the adrenal glands. The patients that do well show overactive adrenals, while the patients that do badly show more or less clinical evidence of adrenal insufficiency. In other words, the adrenals are incapable of lending their assistance in coping with infection, and in postmortem examinations, as shown in the recent influenza epidemic, the adrenals showed marked degeneration.

In chronic conditions the rôle of the endocrine system is apparent. I shall not describe all the chronic ailments in which the endocrine system plays a rôle as this is beyond the scope and size of this paper, but I shall merely refer as an indicator to a few of the common chronic conditions such as asthma, urticaria, and hay fever. I believe with many others that in spite of the fact that these asthmatic and hay fever patients give definite protein reactions that the etiological rôle of these proteins has not been definitely proved. The mere sensitization of the skin to certain proteins does not prove these proteins to be the cause of the condition for there are individuals who give similar reactions who do not suffer from asthma or hay fever. On the other hand, there are individuals who suffer from these conditions who give no protein reaction of any kind. Careful scrutiny of asthmatics and hay fever patients will often reveal that many of them, whether they are sensitive to the various proteins or not, have definite endocrine stigmata and a definite ancestral history of hay fever, asthma or allied conditions can be obtained in the majority of such cases. Furthermore, there is nothing that helps a patient with an attack of real asthma as much as injections of adrenalin or pituitrin, both endocrine substances, and a mere pharmacological explanation does not account for this fact. Consequently I venture to add that the endocrine organs play a rôle in asthma and hay fever at least equal in importance with protein sensibility. Clinically the study of chronic arthritis will show that many of these patients exhibit various endocrine stigmata such as menstrual disturbances, and many of these patients show pituitary markings. Further study in a scientific manner is much needed, for in spite of the fact that many of us may realize these endocrine truths, yet most of us are still commonplace enough to demand at least a slight satisfaction of our reason as well as of our feelings.

THE RELATION OF THE ENDOCRINE SYSTEM TO THE VEGETATIVE NERVOUS SYSTEM.

It was Langley who, years ago, called attention to the importance of the vegetative nervous system. He showed that all the viscera are innervated by the sympathetic and the autonomic or vagus systems, and that these sets of nerves are antagonistic to one another. Eppinger and Hess, whose work has been corroborated by Barker and others, called attention to syndromes in which the sympathetic or autonomic symptoms are dominant. They showed that there is a constant balance between the sympathetic and the autonomic or vagus system. When the autonomic or vagus system is dominant the condition is manifested by various phenomena such as asthma, gastric symptoms, tendency to perspiration, constipation, and other manifestations. Individuals showing manifestations of an irritated sympathetic system they call sympatheticotonics, and those showing irritation of the autonomic or vagus they call vagotonics. Since many of the symptoms of these syndromes coincide with many of the stigmata of evident endocrine disturbances, it is believed that these phenomena of irritation of the vegetative nervous system are the result of definite endocrine disturbance. On the other hand, many neurologists believe that irritation of the vegetative nervous system is the cause of the endocrine disturbance. This is also emphasized by the fact that the symptoms produced by various substances on the vegetative nervous system, such as pilocarpine and adrenalin, are similar to those occurring in definite endocrine syndromes. This is considered to be further evidence of the fact that the vegetative nervous phenomena are endocrine manifestations. But the diagnosis of an endocrine disturbance should not be made on the results of the pilocarpine or adrenalin tests without the concomitant presence of definite endocrine stigmata. While the question of whether the endocrine disturbance is primary or secondary to vagotonia or sympathicotonia is still under abeyance, I believe it is best for therapeutic purposes to assume that the endocrine disturbance is the cause of the phenomena of disturbance in the vegetative nervous system known as vagotonia or sympathicotonia. However, the pharmacological tests for the determination of the state of vagotonia and sympathicotonia are useful as therapeutic aids, because owing to the complexity of the endocrine physiology it is frequently impossible to recognize an endocrine deficiency, and we cannot, therefore, give rational endocrine therapy. But we can determine whether vagotonia or sympathicotonia exists as a result or as a cause of an endocrine disturbance, and we can treat the vagotonia or the sympathicotonia and get beneficial results.

CONCLUSIONS.

I have attempted in this brief paper merely to point the way. A great many axioms may have still to be established before endocrinology can approach being even as near an exact science as other branches of medicine. But the endocrine point of view will enable us to examine our patients more thoroughly and carefully so as to be able to recognize the real endocrine deficiency, if such exists. We can then determine whether the endocrine deficiency is the cause of the symptoms from which the patient is suffering. We must not forget, however, that the human body does not consist of endocrine glands alone. Nevertheless, they may profoundly affect the way in which it reacts to a particular disease. A thorough physical examination of the chest, heart, abdomen, and other viscera is still just as important as it ever was. We must not forget that tuberculosis and all the infections, cancer and all the gamut of diseases are still entities and that the facts established by centuries of good clinical medicine are still as real as they ever were. Nevertheless, the study of the individual from the endocrine point of view, in addition to the thorough physical examination, may enable us to recognize the disturbances of the physiology of his endocrine system and may explain why he reacts in a specific way to the extraneous factors.

We must remember that our present methods of physical examination are crude even at best, and they enable us to recognize only comparatively gross lesions, even with the most careful methods. By the time the patient has a demonstrable lesion a great many things have happened to modify his physiology. And it is by the study of the endocrine system that we may be able to recognize changes in the physiology produced by infections and other diseases long before even the smallest demonstrable lesion. It is well known that a small lesion may produce a profound toxemia or severe general symptoms, and the severity of the symptoms has no relation to the extent of the lesion. And the endocrine glands are often the first to suffer. Tuberculosis, for example, often manifests itself by symptoms of hyperthyroidism long before there are other evidences of the nature of the disease. The loss in weight, the fatigability, the tachycardia in tuberculosis, may be considered as evidence of endocrine injury, and also the nightsweats, a vagotonic symptom. Viewed in this light, the endocrine system has a more important rôle in general medicine than merely forming a small group of wellknown glandular diseases.

REFERENCES.

1. Marie, A.: Du mode d'action de l'Adrenaline sur les toxines bacteriennes, *Annales de l'Institut Pasteur,* Paris, 1919, 33, pp. 645-656.

2. Garibaldi, A.: Thyroide et Immunite acquise. Sur l'influence de la thyroidectomie (chéz le lapin) sur le formation de sensibilisatrices hétérohemolytiques d'immunisation. Comptes rendus. *Société de Biologie,* Paris, 1920, 83, pp. 15-16.

3. Koopman, J.: The Influence of the Thyroid Gland on the Formation of Antibodies, *Endocrinology,* vol. ii, No. 3, July-September, 1919.

4. Rohdenberg, George: Personal communication of work not yet published.

5. Rohdenberg, Bernhardt and Krehbiel: Unpublished observations.

1114 Madison Avenue.

DISORDERS OF THE INTERNAL SECRETIONS IN CHILDREN.

Thyroid, Thymus, and Pineal Glands.

By Murray B. Gordon, M. D., F. A. C. P.,
Brooklyn, N. Y.,

Assistant Clinical Professor in Pediatrics, Long Island College Hospital; Attending Physician, Kingston Avenue Hospital; Chief of Pediatric Clinic, Polhemus Clinic.

THYROID GLAND.

This gland is probably the most important link in the endocrine chain and furnishes us with a keystone from which our knowledge can radiate in various directions to the other internal secretory glands. Due to a voluminous amount of research on the thyroid in both the experimental and clinical fields, in addition to material presented on the postmortem table and in the operating room, the present conception of the functions and disorders of this gland are more positive than that of any other endocrine organ.

The disturbances of the thyroid range from a complete absence of the gland to a hyperplasia and hypertrophy presenting along the line a legion of varied symptoms depending upon the amount of thyroid secretion present in the body. Thyroid disorders can best be classified from the viewpoint of either decreased or increased secretion with a resulting hypothyroidism or hyperthyroidism, respectively. In addition to this a dysfunction or dyscrasia is said to exist in those conditions in which it is difficult to determine whether the symptoms presented are due to either an increased or decreased activity or to a combination of both. Decreased or defective activity may be the result of either organic or functional changes, the former being present in congenital cretinism with an entire absence of the thyroid gland or else the gland is present, even enlarged, but with an absolute loss of activity. Functional changes are manifested in endemic and sporadic cretinism and in minor forms of hyperthyroidism.

The signs and symptoms of sporadic cretinism are classic. At times they may be noticed at birth but as a rule become first visible in a few weeks or months. When fully developed, they are manifested by the following picture: The head is proportionally larger than that of the normal child, with a large open anterior fontanelle, a small, broad, and blunt saddle nose, puffy palpebræ, large ugly mouth with continual drooling and a persistently large hypertrophied tongue protruding from it. The hair is dry, brittle and scant, lanugo, however, being prominent on the forehead. The head is attached to the trunk by a short, stocky neck. The chest is short and also stocky, while the abdomen is distended, of the pot belly variety because of muscular degeneration and chronic constipation, and in addition presents an umbilical hernia. The pelvis is small. The extremities are short and stunted in growth, presenting a characteristic appearance of dwarfism. The skeletal changes are due to the cessation or retardation of normal ossification of cartilage. The epiphyseal end of long bones grow slowly while the periosteal ossification may be normal or even in excess. The fingers and toes are short and clumsy. The mentality is practically nil, the child lying in a listless, apathetic condition, neither crying nor laughing nor calling attention to its wants. As this type of child becomes older, there may be an amelioration in some of the symptoms but never enough to permit the child to approach anywhere near the limits of a normal child. There never is any sexual development. The metabolism is diminished.

In endemic cretinism, which is prevalent in some countries and sections in children of parents who are themselves suffering from some form of thyroid dyscrasia, the condition is not as hopeless as in the congenital form. The mentality is normal, or else only slightly below par; there may be a delay in physical development but there is a stunted body growth giving the endemic cretin an appearance of either infantilism or dwarfism.

Infantilism due to deficiency in the thyroid hormone may assume one of two types: a. Brissaud type, in which there is an enlarged head with arrested physical development and symptoms of hypothyroidism but generally with no impaired mentality; b. Lorain type which is characterized by a slight skeletal structure, greatly elongated extremities, a narrow head, giving in all the subjects a girlish appearance corresponding to a much lower age. The mentality may or may not be impaired.

McCarrison has described a form of cretinism which he terms nervous cretinism. In almost every case there is evidence of a dysthyreosis in the mother or other members of her family. The earliest manifestations of mild nervous cretinism are generally regarded as tetany and occur towards the end of the second year of life. Sometimes a pale puffiness representing the myxedematous phase of dysthyroidism is present, but this is usually transient and later there may ensue a stage of weakness with tottering gait and a more persistent spasm that passes off into a condition that is not to be distinguished from congenital spastic diplegia or Little's disease of moderate degree. In the more severe cases, mental defect is obvious from the first and with the early appearance of nystagmus leads to the diagnosis of congenital spastic diplegia. There are other symptoms of thyroid disturbance present, which, with the improvement under thyroid extract, makes the diagnosis. The picture which is of more interest to physicians is that of the child with signs of minor thyroid dyscrasia who has a deficiency of the thyroid hormone but not enough to make him a cretin.

The manifestations of a hypothyroidism in children may be classified under two groups: a, mental defects and, b, physical defects. In a study of a series of hypothyroidism in children, I found that neither sex predominated in this disorder, that familial tendency toward hypothyroidism was slight, that precedence of birth and nature of delivery were apparently of no etiological significance, that breast feeding did not have any tendency to prevent the condition, and that the importance of syphilis as an exciting cause was probably small.

The mental defects may range from a slight dulness to a marked aberration resembling that present in cretinism. Children with slight mental dulness may go on unrecognized until the school age at which time their retardation is noticed because of their inability to keep apace with their classmates of the same age. A careful history will in all probability disclose that they have been backward along physical lines as well. Still, it is possible for a child to present signs of mental delinquency who never at any other time showed any defects. The majority of cases of mild hypothyroidism do not show mental signs until the end of the first or second year.

In determining the grade of mental delinquency, it is important to remember that some children are abashed before strangers and their deficiency may be more apparent than real. In gauging mentality by means of various tests, it must be borne in mind that the accepted standards of development represent the average only, and that there may be physiological variations from the normal healthy individual as well as pathological variations in the ill, so that a consideration of the general appearance and demeanor is more essential than cut and dried rules of thumb.

The physical defects observed are backwardness in development of the power of holding up the head, sitting, standing, walking, talking and teething. To this may be added certain changes in the bony system, in the skin and appendages and various other deviations from the normal due to a disturbed metabolism. These abnormalities may be present either singly or in groups, with or without an accompanying mental deficiency.

The most frequent delinquency noted among children of the hypothyroid type is in the function of speech. The next most frequent is probably in the power of voluntary muscular coordination as exemplified in holding the head erect, sitting up, and in walking, the latter two being generally associated.

Disturbances in the teeth are very common. Delay in the time of eruption of both the first and second set is noted, or else a child may have early dentition at the age of five or six months, acquiring all its teeth in the normal time and then gradually losing the majority of them in a few months as a result of caries. The chief factor in the production of caries of the teeth, which is very common in this class of children, is the action of lactic acid which is formed by the fermentation of the carbohydrates in the food. It is held that in thyroid deficiency there is an alteration in the quantity and quality of the salivary secretion, due to the jurisdiction of this hormone over the metabolism of calcium salts, so that the saliva is rendered less alkaline or even acid from deficiency of calcium bicarbonate with a resultant failure to neutralize the acid. This may occur in either the first or the second dentition. In older children and adults a condition known as thyroidontia, due to dysthyroidism, presents teeth which are thinner, of slenderer frame, more graceful and transparent, the color tending toward a bluish gray or white.

The skin in hypothyroidism is characteristic, being dry, cold, pallid, wrinkled, scaly, and infiltrated, with sometimes a pigmentation or ichthyosis or eczema. The hair is brittle, dry and scant; the eyebrows and eyelashes are scant, especially the outer third of the former. The nails are brittle.

The socalled hypoplastic type of child, considered by some to be the end result of hypothyroidism, is an undernourished, undersized child, with an unstable nervous system, nasal obstruction, defective vision, delayed epiphyseal union, hypotonicity of muscles and ligaments, high arched palate, postural defects, and incontinemce of urine. It is probably too much to assert that this picture is always due to deficient thyroid secretion, as it is quite possible that the same conditions may be produced by a chronic undernourished state and readily cured by a liberal increase in the right kind of diet, coupled with an improvement in surroundings.

Constipation, deficiency in height and weight, enuresis and convulsions may at times, but not every time, be due to hypothyroidism. How much of the clinical aspect of rickets is due to deficiency of this gland is not known, but it seems plausible, because of some hypothyroid symptoms, to think that the thyroid is a factor in the causation of this diseease.

Delay of sexual maturity, with probably an accompanying dyscrasia of the gonads and pituitary glands, is often met with in these cases of hypothyroidism.

In closely observing the same children with hypothyroidism over a number of years, I have noticed that almost invariably following an attack of any acute disease, such as influenza, pneumonia or any acute exanthem of childhood, there is a retrogression or a cessation of the progress which had been present up to that time; in other words, the children would show more advanced signs of hypothyroidism or would go back to where they were a few weeks or months preceding the acute disease. This condition was also noticed in some children who suddenly presented symptoms of hypothyroidism following an acute infection in whom no signs of thyroid dyscrasia existed previously.

The most probable explanation is that in the course of an acute infection there is an urgent call for the thyroid hormone on the part of the body with a resulting drain and corresponding loss of the thyroid secretion in the body. In this class of children, feeding of the extract during the course of the acute infection should be continued in an attempt either to prevent this loss or compensate for it.

Hyperplasia of the thyroid is seen in children in the form of goitres. Increased activity of the gland with symptoms of hyperthyroidism as manifested in adults is rare, as is also exophthalmic goitre. The types of goitre present in children can be classified as, first, goitre of infancy under one year of age; second, goitre of childhood, one year to adolescence, and third, goitre of adolescence. Almost ninety per cent. of older true cretins show goitre. The symptoms associated are largely proportionate to the apparent changes in the gland. The children are usually below standard in health and stature, are easily fatigued, are languid, have soft muscles and a drooping posture. They do not enjoy play and are irritable. The hair is usually gritty, the hands are cold with a fine tremor. The symptoms are ameliorated by thyroid feeding, as it is possible that in some cases the gland is delayed in development and in the performance of its duties. A simple enlargement of the thyroid may be an effort on the part of the organism to supply an increased demand for its product and thereby not necessarily give rise to symptoms of hyperthyroidism. This is seen in diphtheria and other acute infectious diseases, the enlarged gland disappearing on thyroid feeding.

THYMUS.

The thymus is an organ which is susceptible to all infections and conditions affecting the general nutrition of the body. Physiological involution takes place at about the time of puberty so that the gland is not functionally active in adult life. Pathological involution often results in children in acute diseases like starvation, pneumonia, acute nephritis and acute infectious diseases, this change being only temporary and usually followed by a return to the normal. In chronic disorders, this normal recovery may not take place, the gland instead undergoing permanent involution. Hereditary syphilis, tuberculosis and diphtheria produce atrophy and degeneration. In the course of an acute disorder, the thymus may be decreased to one fifth or one sixth of its normal weight.

The function of the thymus is still an open question. There is a tendency among investigators lately to question the former findings of Klose, Matti, Vogt and their followers that it is a gland of internal secretion and to consider that it has the same or similar function as that possessed by other hematopoietic organs like the spleen and lymph glands.

The experiments of Klose and Matti seemed to indicate that the thymus is essential to life, has a profound influence on growth and development of the body, and presides especially over calcium metabolism of the body. They found that the removal of the thymus in animals was followed by marked disturbances in growth, that the animals developed a condition resembling rickets, and showed well marked changes in the adrenals and thyroid. Removal of the gland in puppies resulted in a condition of adiposity which lasted from two to three months, this in turn being followed by a cachexia and an impaired mentality resembling idiocy, the entire picture culminating in death in about four months. It was asserted that extirpation of the thymus in children was followed by the same results.

Lack of thymus secretion or lessened activity of the gland, according to this school of investigators, gives rise to similar symptoms in children manifested by a stunted growth which may reach the stage of dwarfism, bone changes resembling those found in rickets, osteomalacia and osteoporosis, and defective mentality or even idiocy. Dysfunction of the thymus may produce certain changes in the teeth known as thymodontia. The teeth are of a porcelain bluish color, thin at the edges and translucent at that part. In some children, a tendency to scalloping at the grinding edge is shown.

Hyperplasia and enlargement of the thymus may be evidenced in one of several ways:

- A. Status thymus. (No changes in lymphatics.)
    1. Simple hyperplasia with clinical and anatomical evidences of compression.
    2. Simple hyperplasia without symptoms.
    3. Simple hyperplasia with an accompanying activity of the thyroid which may cause clinical symptoms of exophthalmic goitre (rare in children).
    4. Congenital enlargement of the thymus.
- B. Status thymolymphaticus.
    1. Enlarged thymus associated with general enlargement of lymph glands, like adenoids, spleen, tonsils, and mesenteric glands.
    2. Congenital enlargement of thymus and lymph glands.

Enlargement of the thymus may cause no symptoms at all and the first warning of the presence of this condition may be a sudden paroxysm of severe dyspnea which may or may not terminate fatally, or sudden death may occur from some slight cause or following a trivial operation. The chief complaint is nearly always a cough or attacks of choking which come and go, frequently in paroxysms. Three definite symptoms are generally present: dyspnea, stridor, and suffocative attacks with cyanosis. The dyspnea is the most striking sign and may be constant or intermittent, with or without paroxysms. The stridor is inspiratory in character and may be aggravated by fits of anger, exertion, or sudden retraction of the head; it is more marked in sleep because of the position of decubitis assumed.

Diagnosis of this condition depends upon clinical manifestations of a thymic asthma, physical findings, and x ray examination. Enlargement of the thymus may be demonstrated by the socalled threshold method of percussion. The child is placed on his back in his mother's lap. Percussion is begun well out in the chest with such light strokes that when the ear is within a few inches of the area under percussion only the faintest resonance is heard. When sound disappears, dulness begins. The outer limits are determined much more easily than the lower boundary. The latter, which may be obtained by auscultatory percussion, is relatively less important.

Postmortem examination in cases of sudden death have in several instances revealed an enlargement of the thymus gland as the only pathological finding with or without an accompanying hyperplasia of the lymphoid tissue of the body. This has led many to accept the thymus as the causative factor of death, explaining it on the basis of physical compression of the trachea or of the great vessels in keeping with the anatomical arrangement of the thymus. It has not been fully established that this is the modus operandi. Hammar, by scientific and accurate research, has performed pioneer work in disproving this idea of thymic death by demonstrating by means of detailed anatomical preparations that the positions of the trachea and thymus are such that an enlarged thymus could not compress the trachea as formerly believed. He also attempts to prove that the thymus enlargement is not a constant feature in thymic death. He affirms that socalled thymic death is not of thymic origin, proving his case by a comparison of the condition of the thymus in postmortem examination in children who died from socalled thymic death and in children who had died from external injuries or accident. The thymus in cases of sudden death from internal causes differed in no respect from the thymus in healthy children who died from accident. This question is discussed in greater detail in a previous paper on the rôle of the thymus in children.

Children of the socalled thymolymphatic type, or rather, lymphatic type, in whom there is a hyperplasia of the thymus and of the lymphatics display common clinical manifestations of what has been termed the hypoplastic individual. While apparently well developed, they are really stout, flabby and with a peculiar pasty color, are prone to all infections, do not stand operation well, show a general lowered resistance, have adenoids and hypertrophied tonsils, a high arched palate, and sometimes a mentality below par.

PINEAL GLAND.

The present knowledge of the functions and disturbances of the pineal gland are based mainly upon the report of about seventy cases of pineal neoplasms in the literature. Unfortunately, however, the inadequacy of the postmortem findings, mistakes in translations of some and the unreliability of the clinical manifestations of others, coupled with the fact that the majority of them were not written from the viewpoint of current endocrinological belief, have given rise to various contradictory interpretations at the hands of investigators. In addition there are the reports of extirpation experiments and feeding of pineal gland to animals and humans.

It is generally accepted that the greatest postnatal development of the gland is in the first few years of life and that if it is at any time functionally active, it is so during that period, involuting and ceasing to functionate at some time between seven years and puberty. One group of investigators believe that the pineal produces an internal secretion which inhibits the growth of the body and restrains mental and sexual development from exceeding the rate accepted as normal for preadult life. This inference arises from the occurrence of the sexual and physical precocity accompanying the invasion of the pineal gland by a tumor, it being assumed that such a neoplasm destroys the pineal tissue and that the resulting disturbances occur from lack of pineal secretion.

These disturbances can be grouped under two classes of symptoms: neurological and metabolic, the clinical manifestations of both arising from the encroachment of the neoplasm on the intracranial contents and are indicative of disturbance in pressure, in placement, and in destruction of tissue. When occurring in children before puberty, they give rise to metabolic symptoms and are referable to disturbances of the secretory function of the gland. They may have neurological signs associated. Lesions occurring in adult life produce neurological manifestations and never any metabolic as the gland does not functionate after puberty.

The neurological symptoms are those usually found as a result of intracranial pressure from any tumor of the midbrain or of the corpora quadrigemina and are exceedingly difficult to diagnose *per se* as arising from pineal disturbance. The first symptom is usually a headache which varies in location but is generally occipital at the onset and diffuse later. Vomiting, vertigo, optic neuritis, ocular motor disturbances and neuralgic pains are also present. Drowsiness is noticed, the degree depending upon the amount of hydrocephalus.

The metabolic symptoms are: a, adiposity, b, sexual changes, and c, cachexia. This is the syndrome of hypopinealism found in children suffering from a lack or a diminution of pineal secretion, according to one set of investigators. The adiposity is independent of the character of the tumor and it is at times difficult to determine whether it is due to disease of the pineal or of the pituitary, as there is a marked hydrocephalus of the third ventricle with both. The sexual changes accompanying pineal tumors consists of, 1, early sexual development evidenced in enlargement of sexual organs, presence of pubic hair and general body hair and change in voice to that of the deep masculine type; 2, precocious mental development manifested by maturity of thought, mind and speech; 3, general body overgrowth to the extent that a child of five or six years may have the appearance of one of eleven or twelve. This syndrome is not limited to boys, but when present in girls it does not involve any primary sex changes, but does show secondary manifestations, such as menstruation, enlarged breasts, and pubic hair. The cachexia present may not have any relation to the pineal, hydrocephalus or to the tumor itself, but appear as a secondary symptom.

This syndrome, to which Pellizi has given the name of macrogenitosomia præcox has been accepted by some as being the clinical manifestation of a destructive lesion of the pineal gland, most usually a tumor which could be interpreted as the end result of a lessened pineal secretion (hypopinealism) on the assumption that the function of the pineal is to inhibit the overgrowth of the sexual organ and instinct beyond the normal.

This interpretation is attacked by McCord, Dana and Berkeley, who found that these same symptoms of supposed hypopinealism were produced experimentally by feeding pineal gland to animals. These latter observers are the leaders in a second class of investigators who consider that the symptoms of a sexual and physical precocity are due to a hyperpinealism instead of to a diminished secretion. These latter findings are contrary to the belief that the pineal secretion holds in abeyance too rapid somatic, sexual and mental development in early life.

McCord explains the occurrence of this syndrome with pineal tumors by the claim that the cells of the neoplasm involving the pineal may retain some of the metabolic and other functional characteristics of the normal gland from which they are derived. He calls attention to the possibility of the pineal tumor leading to an active, constructive and stimulating influence as being suggestive in some of the cases in the literature.

Cornell and Goddard reported the effects of pineal feeding in delinquent children. They found that the gland was beneficial in cases of simple mental retardation without any organic changes but useless in Mongolians, congenital idiots or in defectives over fifteen years of age. The beneficial results were in inverse proportion to the degree of physical defect present, in other words, the greater the number of stigmata in the patient, the less the effect of the feeding, and *vice versa*. There was an increase in mentality and physical development in the subjects up to a certain point, except in the weight, in which there was a slight reduction below the control, but not below the normal. The investigators felt that they could not be certain of any mental defect in the children which might be ascribed to either deficiency or entire lack of the pineal secretion.

Because of these contradictory findings, it is exceedingly difficult to arrive at any conclusive opinion as to the functional activity of the pineal gland. There has been nothing substantial brought forward to show that it possesses an internal secretion. The experimental work has failed to prove that it possesses a function and no experimental studies are so complete as to allow comparison with the very striking syndrome seen clinically. In the final analysis, it seems justifiable at the present time to state that our knowledge of the function of the pineal gland is more problematic than accurate.

REFERENCES.

1. McCarrison, R.: *Lancet*, 1908, ii, 1278.
2. Gordon, M. B.: Thyroid Medication in Children, New York Medical Journal, April 26, 1913.
3. *Idem:* Clinical Study of Fifty-five Cases of Hypothyroidism in Children, *Archives of Pediatrics*, October, 1918.
4. *Idem:* Rôle of the Thymus in Pediatrics, *Endocrinology*, 1918, ii, 405.
5. *Idem:* Rôle of the Pineal in Pediatrics, *Ibid*, 1919, iii, 437.
6. Kaplan, D. M.: An Endocrine Interpretation of the Dental Apparatus, *Ibid*, 1917, i, 208.

4803 Fourteenth Avenue.

THE EFFECT OF THE THYMUS AND MAMMARY ON MENSTRUATION.*

By Adolph Jacoby, M. D.,
New York.

Instructor in Gynecology; Chief of Gynecological Clinic, New York Post-Graduate Medical School and Hospital.

The menstrual function in woman preeminently stands forth as a valuable guide in the estimation of the activities of the various glands of internal secretion. From the premenstrual phenomena, the duration and quantity of the menstrual flow, its regularity, its accompanying phenomena, and from its variations, one may discover the presence of any dysfunction of the ovary and the associated glands in the production of the menstrual cycle.

With this easily observable function as an index, it was sought to determine to what extent menstruation could be influenced by the administration of gland extracts theoretically and experimentally opposed to the ovary and its aides in the production of this phenomenon. For this purpose thymus and mammary glands were used. It may be of interest to state the evidence on which the use of these glands for this purpose is based.

---

*From cases studied at the Gynecological Clinic, New York Post-Graduate Medical School and Hospital.

THE THYMUS.

The thymus is a gland which has its maximum growth and function before puberty. It gradually atrophies in the majority of cases after puberty. During its period of growth the ovaries do not function. As the thymus atrophies the ovarian function becomes manifest; menstruation begins, and the secondary sex characteristics become evident. Feeding thymus extract to frog larvæ causes an increase in their growth, but no differentiation. The removal of the thymus in animals causes an increase in the weight of the testes or ovaries. The removal of the testes or ovaries on the other hand causes an increase in the thymus. From these experimental and physiological observations it becomes evident that there is a direct antithesis in the action of these glands; that when the function of the one is in evidence that of the other is in abeyance and vice versa.

THE MAMMARY.

The mammary gland enlarges during the period previous to the onset of menstruation and ceases to enlarge when menstruation starts. There is an increase in size of the breasts during pregnancy; at this time there is usually no menstruation. During lactation, when the activity of the mammary gland is very great, there is as a rule no menstrual function. At the time of nursing there is usually caused a marked contraction of the uterus, which is a great factor in the aid of involution. It is evident from these facts that the mammary gland, in addition to its milk secreting function, has an inhibitory action on the ovary and a stimulating action on the contractility of the uterus.

In order to determine how far these conclusions were borne out by actual practice, the patients in a series of cases were placed under treatment, using the extracts of mammary and thymus alone and in combination. The administration of the extracts was continued for from one to six months, using five grain doses three times a day.

In these cases the menstrual history varied from five days to two weeks in duration, from a moderate to a very profuse flow, and in some instances accompanied by clottings of the blood. The pathological findings included salpingitis, unilateral or bilateral, parametritis, fibroids, subinvolution and retroversion; salpingitis occurred twenty-seven times, parametritis twenty-eight times, subinvolution nineteen times, retroversion thirteen times, and fibroids ten times; of course the majority of cases showed more than one pathological condition. In all, seventy cases were observed.

In seventy-five per cent. or fifty-three of these cases, a diminution of both the duration and the quantity of blood lost during menstruation was noted. In some instances the diminution was quite marked. The remaining twenty-five per cent. or seventeen cases showed no or very little change. One quarter or thirteen of the fifty-three cases showing a diminution, were taking mammary extract alone; the other three quarters or forty cases were getting thymus and mammary combined. Those getting thymus extract alone showed no change. A few illustrative cases may be briefly cited to show the extent of this action.

Case I.—M. L., aged forty, para fourteen. Menstrual history began at fourteen, regular, of seven to ten days' duration, profuse flow. On examination she showed a relaxed vaginal outlet, cervix lacerated, uterus anteflexed, quite firm in consistency, regular in outline, and movable. The adnexa were negative. The parametrium was thickened posteriorly. The diagnosis was fibrosis uteri and posterior parametritis. On March 19th she began taking five grains of thymus extract and five grains of mammary extract three times a day. On March 27th she began to menstruate, continued for nine days, profuse in amount, but slightly less than her previous menstruation. On April 18th she again menstruated for eight days, moderate in amount, but considerably less blood was lost. In May and June she menstruated for four days, moderate in amount, much less flow than at any other menstrual period. The total amount lost was equivalent to the amount previously lost during one day.

Case II.—H. Z., aged thirty-five, para three. The menstrual history began at fifteen, regular, every four weeks, seven days' duration, profuse in amount. When first seen she had been bleeding continuously for three weeks. On examination she showed a lacerated perineum, cervix lacerated. The uterus was anteflexed, enlarged, hard irregular, several small nodules on the anterior wall. The adnexa were negative. The paramentrium was thickened posteriorly. A diagnosis of fibroids and posterior parametritis was made. On September 9th five grains each extract of thymus and the extract of mammary were given three times a day. The bleeding ceased within three days. On September 30th she menstruated for a week. In October her menstruation was of four days' duration, moderate in amount and considerably diminished in quantity. In November and December her menstruation was the same as in October. During this period there was no intermenstrual flow.

Case III.—L. M., aged forty-two, para three. The menstrual history began at thirteen, regular, seven to ten days' duration, profuse flow. On examination she showed a relaxed pelvic floor, cervix lacerated and eroded. The uterus was enlarged, not very firm, movable and regular in outline. The adnexa were negative. The parametrium was thickened posteriorly. The diagnosis was subinvolution and posterior parametritis. On December 2nd she began taking five grains of mammary extract three times a day. The first menstrual period following the taking of the extract lasted nine days, rather profuse in amount. The menstruation of the following month lasted six days. The next two menstrual periods were of three days' duration. The amount lost was gradually diminished so that at the third menstrual period the flow was moderate in amount.

Case IV.—A. H., aged thirty, para two. The menstrual history began at thirteen, regular, every four weeks, five days' duration, profuse in amount. On examination she showed the pelvic floor negative, vagina negative, cervix lacerated, uterus anteflexed, not enlarged, regular in outline. Both tubes were quite thickened and sensitive. The parametrium was infiltrated. The diagnosis was bilateral salpingitis and parametritis. On December 9th she began taking extract of thymus three times a day. On January 9th she menstruated for five days, profuse in amount, the quantity lost the same as during her previous menstruations. On February 12th she again began to menstruate, continued for five days, profuse in amount, the quantity lost practically the same as the previous menstruation.

The blood pressure during the taking of these extracts was lowered from ten to fifteen mm. The usual systolic pressure ranged from 100 to 110 mm.

CONCLUSIONS.

It becomes evident from these figures and case reports that the inhibition of the ovary alone is not sufficient to influence menstruation as is shown by the failure of the extract of thymus alone to cause any change; that the extracts are quite effective in the control of menstruation in the majority of cases; that the combined extracts act better than either alone.

This is to be expected, as it is rare to have a disturbance of the internal secretions involving only one gland; and just as infrequent to have the disturbance corrected by the administration of a single suitable extract.

1141 Fox Street.

THE THYROID GLAND AND THYROTOXICOSIS.

By A. Wiese Hammer, M. D.,
Philadelphia,

Surgeon to the American Hospital for Diseases of the Stomach; Instructor in Anatomy, Graduate School of Medicine, University of Pennsylvania, Polyclinic Section; Surgeon to the Pennsylvania Railroad.

The discovery, within recent years, that the ductless glands elaborate complex substances to which the name internal secretion is applied, has changed our conceptions of the etiology and pathology of many medical and surgical affections, and has clarified the way for the application of a more rational therapeusis in the treatment of some heretofore obscure maladies. Twenty-five years ago the standard works on anatomy, physiology and pathology spoke of the ductless glands as "enigmatic" organs. But with the march of medical progress, the tonsil, the thyroid, the spleen, the thymus, the adrenals, and other glands, were regarded as far more than masses of tissue assembled in the body—they are now known to be indispensable parts of a great working whole, elaborators of secretions that through interrelations balance the body, and are thus integral factors in the maintenance of metabolic activity.

The parathyroid glands, or the true accessory glands, discovered by Sandström in 1880, are possibly identical in function with the thyroid, but this has never been fully determined.

In answer to the question in regard to the functions of the thyroid and the parathyroids, we may negatively offer an answer by tabulating the changes in bodily functions due to loss of the thyroid and the parathyroids. These also include instances of true myxedema; interference with growth, disturbances of the sexual function, disturbances of sensation, epilepsy, tetany, and other symptoms. In human beings and in cats and dogs tetany has often been produced by obstructing the function of the parathyroid glands.

By tabulation we may list the symptomatology of disease due to interference with the thyroid function as follows: Alterations in the skin and epithelial tissues, as evidenced in the myxedematous changes so often noted, dryness and desquamation of the skin and cutaneous pigmentation; depression of the circulation as evidenced by the small, slow pulse, subnormal temperature, cyanosis of the extremities, cardiac dyspnea on exertion, and the tendency to syncope; changes in the nervous system, as lassitude, depression, melancholia, muscular rigidity, epileptiform convulsions; changes in metabolism, especially in the urinary system, the quantity of urine decreased, as likewise the output of urea and nitrogen, and the low specific gravity; blood changes—these include marked decrease in the erythrocytes and a corresponding decrease in the hemoglobin, more often a disproportionate decrease; there is a decrease of the leucocytes, the viscosity of the blood is increased; interference with bodily growth in height, shown by the persistence of the epiphyseal lines.

From these tabulations it becomes selfevident that the thyroid and the parathyroids, through their elaboration of an internal secretion, or through the interrelation between that elaboration and the secretions of other ductless glands, sustain the integrity of the nervous system, of the blood, and of the circulation. They exert a metabolic action upon the skin and the underlying subcutaneous tissue, and also play an important rôle in bodily growth. All of these interrelations are prominently displayed, especially through the nervous system, at each recurring menstrual epoch.

Many of these symptoms, in conjunction with a few others, constitute the symptom complex of Graves's or Basedow's disease, and, because of the toxic principles arising from the errors in metabolism connected with thyroid function, a most convenient term would be thyrotoxicosis. Thyrotoxicosis may be exogenous or endogenous, due to substances from without or from deleterious matter within the organism. These substances may be the normal metabolic products or the results of a pathological process.

The toxins resulting from retention or from too rapid absorption or excretion, permeate the substance of the gland structure, and thus surgical intervention upon the gland structure itself is productive of best results. As thyroid activity is greatest between the twentieth and the forty-fifth year, thyrotoxicosis is most generally developed in the interval between these years—the period of greatest functional activity of the thyroid and parathyroid glands.

Each disease may present a varying clinical picture, but diseases depending upon functional disturbances of the thyroid offer a uniform series of symptoms. Thus the thyroid may show marked enlargement, and, as a result, increased vascularity. And what does this increased vascularity mean? To the palpating finger, an expansive pulsation; to the stethoscope, a thrill or a blowing murmur. Upon deep palpation the gland feels less elastic—in other words, it is firmer. These phenomena are more prominent as the onset is more abrupt. Among the circulatory symptoms, tachycardia is a predominant symptom. The pulse is frequent, quick, and of high tension. Because of the increased velocity of the blood, murmurs are produced, congestions are usual, and nosebleed is not an uncommon symptom. The nervous symptoms are mental and bodily unrest, tremors, and insomnia.

Certain phenomena, possibly of an associated trophic nature, are commonly encountered. These include sweating of the palms and the axilla; much of the hair, including that of the eyebrows, falls out, and becomes pale in color. The skin becomes waxy and translucent, the nails and teeth brittle. Reddening and pigmentation of the skin are common. The gastric distress and diarrhea may either be of metabolic or of nervous origin.

When the disease progresses, the patient is easily fatigued, becomes markedly emaciated from absorption of the subcutaneous fat, the bones become more delicate, and the ligaments of many of the articulations become lax and overdistended. The blood picture is absolutely characteristic and may be the sole means of making a diagnosis. The different normal leucocytes undergo changes, their number being somewhat decreased. The neutrophile leucocytes, which in health are most numerous, suffer an enormous decrease, so that they may be less in number than the lymphocytes; the latter are sometimes increased to twice their normal number, and even if there is no actual increase, the augmentation is at least relative. There is a decrease of the eosinophile leucocytes. The erythrocytes are about normal in number, likewise the proportion of hemoglobin. Coagulation of the blood is retarded.

There are certain types of thyrotoxicosis in which the disease runs a rapid, acute, fatal course. Death in these cases is due to an overwhelming of the heart through the agency of the virulent toxin. The heart suffers an enormous dilatation, the pulse is irregular; there are all the signs and symptoms of collapse, plus anuria, albuminuria, fever, dyspnea, increase of hepatic dullness. These ominous symptoms increase more or less in severity, until the patient passes into unconsciousness, from which he never can be roused.

The chronic forms offer a far less constant clinical picture: tachycardia, mental and physical unrest, and changes in the blood. In some of these cases there is marked cutaneous pigmentation; in others there may be obesity, skin diseases, falling of the hair, paralysis, glycosuria, and other symptoms, showing that the toxins emanating from, or in some way connected with thyroid activity or overactivity, are responsible for organic functional or trophic changes throughout the economy.

The outlook in these cases depends largely upon the recognition of the underlying causative factors and the early institution of suitable treatment. When the disease develops suddenly, the prognosis is more grave than when the onset is more insidious. In many cases, much good may be accomplished by the employment of the best possible hygienic measures, placing the patient in the most favorable sanitary environment, giving him ample rest, nutritious dietary, together with the exhibition of tonics and cardiac sedatives. The vascularity of the thyroid is often beneficially influenced by electricity, at other times by the röntgen rays. Serum obtained from thyroidectomized animals has been employed with asserted good results. Others are partial to the injection method with iodine, and iodine derivatives, such as iodoform.

In a brief consideration of the thyroid gland, the mind intuitively reverts to the very common disease which is specific to that gland, namely, goitre. (A detailed study of diseases of the thyroid gland and their differentiation is not the intention of the writer in the present paper. For that reason, no mention is made of persistent thymus gland and many other states and conditions that might be mistaken for goitre in which instances the röntgen rays play so important a part.) In a brief epitome, such as this, it would be irrelevant to rehearse the cardinal signs and symptoms of goitre, and I only make mention of the disease, because the pathology and the biochemistry of the thyroid, so much investigated and, until quite recently, so little understood, opens up a valuable and fascinating field. Over a span of many years, the profession has insistently asked, What is goitre?

The theories announced and the deductions arrived at to account for the occurrence of goitre are in themselves a contribution of tremendous proportions to the literature of medicine. Some years since, Hirsch (1) gave utterance to the subjoined assertion which is as true in the light of our present knowledge as it was then:

"The absence of results to all these inquiries about the genesis of goitre and cretinism—inquiries which have extended to every influence perceptible to the senses that could be brought into the consideration of the question before us—warrants, I will not say compels, the conclusion that in these diseases we have to do with a specific agent, a veritable morbid poison; and that endemic goitre and cretinism have to be reckoned among the infectious diseases.

"The doctrine finds support in two things: On the one hand the amount of fluctations in the amount of sickness which we have had frequent occasion to notice and for which there is no sufficient explanation to be found, in the states of the atmosphere, or of the soil, or of the hygiene; on the other hand, the epidemic outbreaks of goitre, for which the theory of infection, as Saillard, Viry and Richard, Thibaud, and other French military surgeons have recognized and said, is hitherto the only one that affords an explanation that accords most nearly with the facts of the case."

In passing, it is interesting to note a peculiar connection between the sexual function and the thyroid.

A physiological enlargement of the thyroid gland is to be noted during the period of each menstrual flow and also during pregnancy, and it may also be evidenced during parturition. But it is still a moot question if this be due to congestion or to a hypertrophy of the glandular elements. In girls, enlargement of the thyroid is common at puberty, and three German investigators, Schönlein, Friedreich, and Heidenreich, describe it as a specific entity, to which they apply the term *struma antemenstrualis*. Large goitres may be found in the fetus, and in the embryo they may form an insuperable mechanical obstruction to the birth of the child or lead to a face presentation.

The symptoms of goitre are caused in part by the presence of the tumor—mechanical and physical symptoms—and in part by the effect of the tumor on the structure of the gland, i. e., the functional symptoms. Among the pressure symptoms, as commonly observed, we note congestion of the head and neck from enlargement of the veins and some cerebral symptoms from pressure on the carotids, irritation of the recurrent laryngeal nerve, causing spasm of the glottis or laryngeal paralysis, compression of the trachea, causing dyspnea, and other similar symptoms. Rapidly growing goitres are usually fatal. A malignant goitre grows rapidly, becomes adherent, infiltrates, and quickly produces metastasis.

It should be remembered that a goitre that occurs at puberty may later disappear. Any nonmalignant tumor which is rapidly increasing in size should be operated upon, or any goitre which is causing serious pressure symptoms. Ether and chloroform increase the bleeding. The choice of a local anesthetic rests largely with the individual operator. I prefer local anesthesia with novocaine (one half to one per cent.) ; others use a one per cent. solution of cocaine with adrenalin or Schleich's fluid. It is a great advantage to have the patient conscious, because by asking him to speak during operation, the surgeon can tell if the recurrent laryngeal nerve is being interfered with. A portion of the thyroid must be left intact or myxedema will result.

These collected thoughts are merely presented as a postscript to the many excellent articles emanating from numerous writers on a study of the thyroid gland from various viewpoints. In this brief paper an attempt has been made to show the immense importance of the thyroid gland as an elaborator of a most vital internal secretion, its invaluable office in the economy, and how its perversion may lead to the dangerous symptoms of thyrotoxicosis, which includes a formidable list of distressing and often serious maladies.

REFERENCES.

1. Hirsch: *Handbook of Geographical and Historical Pathology.*

218 South Fifteenth Street.

THE MANAGEMENT OF TOXIC GOITRE WITH RADIATION.

By J. Thompson Stevens, M. D.,
Montclair, N. J.
Fellow of The American Röntgen Ray Society.

The particular kind or type of goitre under discussion in this paper is also known as Graves's disease, exophthalmic goitre, hyperthyroidism and Basedow's disease. It seems to me that the term toxic goitre is the most useful since it leaves no room for imagination or doubt as to just which type or kind of goitre we refer to. This paper will be limited to a discussion of the treatment of toxic goitre, the type of goitre that poisons the patient; that produces tachycardia, muscular tremors, exophthalmos, and other symptoms, and finally kills the patient by exhaustion.

Toxic goitre has been treated medically, surgically, and, lately with increasing frequency, by radiation; each method of management having peculiar advantages over any of the other methods in properly selected cases. There are the cases for medical treatment, for surgical treatment, and for radiation. In nearly all cases a combined method is generally most important, i. e., medical and surgical methods are combined with distinct advantage, and the same is true of the medical methods and radiation. In fact, it is probably unwise to treat a patient by either radiations or surgery without the cooperation of a good internist. The disadvantages of each method might be summed up somewhat as follows: The medical treatment is likely to be continued for too long a time for the good of the patient. Nearly all patients treated medically will sooner or later be suitable for either surgical treatment or radiation. Frequently operations are done upon patients in the wrong class of cases at the wrong time, either at the height of toxic symptoms or too late. The mistakes in radiology are, hit or miss methods of applying radium or the röntgen rays by technicians. Any good results obtained by them are probably accidental. Generally such treatment results in no good to the patient, or more harm than good. Simply because a man is an expert radiographer does not necessarily indicate that he is qualified to handle radiotherapeutic agents. Again the technicians are guilty of at times treating cystic and other types of goitres and really expecting results. Such methods will of course serve only one purpose, that is to prevent a large number of toxic goitres from being treated by radiation, for news of failure travels much faster than that of success. Work by the technicians has this in its favor, however, it is very cheap.

It is to be regretted that we cannot promise the patients operated upon an absolute cure. The operation is one of the most disfiguring as well as one of the most dangerous in the realms of surgery and so it seems hardly justifiable to subject so many patients to surgical treatment when the ultimate hopes of cure are questionable. Many of the patients become worse in a short time than they ever were before. The thyroid cannot be completely removed and that portion left behind is likely and often does hypertrophy, hyperfunction soon returns and soon the patient is in about the same condition as before the operation. These patients are now commonly sent to the radiologist for help and from the large proportion of patients in these hopeless cases that are being discharged as cured, and who remain well, it is reasonable to conclude that all patients, other than the cases of the strictly medical types, ought to be thoroughly radiated before any operation is advised. If this were done at least ninety per cent. of the cases would never come up for operation. Besides the patients that have been operated upon from one to three times that are referred to the radiologist, are those that are too ill to offer any hope of an operative success. The radiologist gets some of these cases. Under careful, thorough radiation at least ninety per cent. of these patients can also be cured. Those of you who read this paper, if you believe in it, will see that cases of toxic goitre demanding operation are few. In fact about the only cases of toxic goitre demanding operation are those in which we suddenly find symptoms of suffocation due to pressure.

Another distinct advantage that radiation has over the operative method is that we can stop treatment when the patient has had enough radiation to produce a normal state of affairs. A continuation of treatment past this stage will produce the opposite condition, i. e., hypothyroidism. The surgeon cannot, of course, be absolutely sure whether he is removing too much of the gland or too little.

The basal metabolism tests of the present day, as done in the clinical laboratories, give us a reliable, scientific test a study of which will clearly show just when to stop the radiations. A good simple test is as follows: take the pulse with the patient lying down and sitting up. If the variation is greater than in a normal individual we have not yet reached the stage when the radiations can be stopped with permanent results. (Pfahler).

In about ninety per cent. of the cases there is an enlargement or hyperplasia of the thymus gland in addition to the hyperthyroidism. In radiating in a case of this kind the thymus will also have to be radiated too if we are to be successful. A röntgenogram of the chest underexposing the plate very little will show clearly the conditions in the region of the thymus gland. There are probably three types of toxic goitre, those of thymic origin, those of thyroid origin, and those of both thyroid and thymic origin.

Radiation can be administered in one of two forms or both combined, i. e., either the röntgen or radium rays can be used. The action of either agent is the same. I prefer the röntgen rays because one has at hand an unlimited supply of the rays, the treatment can be had for a comparatively small fee, and because the rays coming from a Coolidge tube backing the equivalent of 90,000 volts and filtered through six mm. of filter are not greatly different than the useful gamma ray given off by radium. Radium has the advantage that it is much easier to apply, the technic is easy as compared with the tedious röntgen technic, and it is portable, thus facilitating the treatments at home and with less shock to the patient. But as I have stated the method used matters little providing we are thoroughly acquainted with the method we intend to use.

Personally, I would not accept a case for treatment unless I could have the cooperation of an internist. It is not at all uncommon in the severe toxic cases for the patients to be more toxic in from one week to ten days following the first series of treatments, and for this reason in these severe cases we must begin by carefully increasing the milliampere minutes gradually. This stage is fortunately followed in a short time by a complete or marked relief from the symptoms of hyperthyroidism. The tumor may decrease in size somewhat following the first series of treatments, but generally more treatment is necessary before one notices much change in the size of the growth. It is not uncommon for a goitre the size of a grape fruit to reach the size of a robin's egg in from four to five series of treatments, the patient in the meanwhile enjoying perfect health.

RONTGEN TECHNIC.

Usually four fields or areas for treatment will be sufficient, crossfiring on the diseased area from each. Set the machine so that it will back up the equivalent of 90,000 volts, six mm. of filter, focal distance ten inches, and administer to each area or port of entry about seventy-five milliampere minutes, according to the value of the particular machine in use. Repeat at monthly intervals. As soon as the patient begins to gain weight, the pulse begins to slow down and become more regular, and the nervous symptoms decrease, the interval between treatments should be lengthened. Treatment can be stopped just before the metabolism tests show that conditions are normal.

CONCLUSIONS.

1. Metabolism tests show that at least ninety per cent. of the toxic goitres can be cured by proper röntgen therapy.

2. Radiation properly carried out is at present the method of choice in many of the medical centres throughout the world. It does not disfigure the patient for life, it is decidedly less dangerous, and the results are at least as good if not better than those obtained by any other method. The danger just mentioned refers to high tension shock.

3. Many of the cases that are being referred for radiation are those that are too ill to withstand operations and those that have had operative failures. The results obtained in these cases only serve to prove that radiation is the best method in properly selected cases.

4. An outline of the possibilities of both surgery and radiation should be presented to each patient suffering with toxic goitre. They will generally select radiation themselves.

55 Park Street.

LONDON LETTER

(From our own correspondent.)

The British Milk Supply—New Year Honors for Medical Men.

London, *January 8, 1921.*

Among a certain proportion of the members of the British medical profession, cow's milk as a food appears to have fallen somewhat into disrepute. Exaggerated statements have been made on both sides. Some assert that milk is almost a perfect food for infant and adult; some go so far as to assert that it is suitable for neither one nor the other, while a number of authorities hold that under favorable conditions, when it is pure and properly modified, it is well adapted for infants when mother's milk is not available. Dr. Harry Campbell agrees with this point of view, but submits that after a baby has cut its teeth cow's milk is not a natural food, and that it was never intended to be used as such.

An example of changed and current opinions on this question is furnished by an address given recently before the British National League of Health and Civic Education League by Dr. Waller, a well known infant welfare worker in the East End of London. Taking as the title of his address Milk in Relation to Maternity and Child Welfare, Dr. Waller declared that milk occupied a far too important place in a child's dietary. It had certainly become a slightly less lethal drink than it was a few years ago, but it was still very dangerous. Of course it was a splendid medicine for delicate children, but the grossest liberties were taken with its prescription. The ordinary child was given far too much milk after the first eight or nine months of life. It grew fat, and was regarded as healthy, but if as much was known regarding the points of a child as about the points of a foxhound, horror would be expresed at some of the children who were now passed off as healthy. After they ceased to be breast fed the children of the East End of London were given very little milk, yet they were found to resist disease and recover from illness better than the fatter children brought up on cow's milk. Children should be given more water to drink, and when they were a few years older they could start on very much the same diet as their parents. Most of the children of the East End of London were given plenty of suet pudding, and that was a splendid diet, provided the pudding was well cooked. They also were given cooked meat, and that again was an excellent thing.

It is admitted on all sides, however, that mother's milk, when available, is the most nutritious food by far for infants. When for various reasons it cannot be had, cow's milk is the almost universal substitute. The object then must be to procure milk in as pure a condition as possible. In England the state of affairs in this respect is by no means satisfactory; cow's milk, generally speaking, is not up to the high standard of America. Efforts are now being made to improve the milk supply, and a bill will be presented to Parliament soon for licensing milk producers and distributors, with power to revoke their licenses. Another advantage of the bill will be that the classification of milk will be therein provided for. In the meantime, how is suspected milk to be dealt with in order that it may not be a source of danger as a food and especially as an infant food? It may be sterilized by boiling or partially sterilized by pasteurization. It is said that if boiled some of the vital and essential properties of the milk are destroyed, and if pasteurized the same thing happens to a less extent. It must be borne in mind that, as pointed out editorially in the *Lancet*, January 8, 1921, the caloric value of boiled milk is identical with that of raw milk, but at the same time overcooked milk will not serve as an exclusive food because it is lacking in certain accessory factors which are essential for growth and adequate nutrition. These are the vitamines concerning which much has yet to be learned. For instance, are the vitamines of milk, or rather the antiscorbutic vitamine, destroyed by heat? Professor Gowland Hopkins, at the last meeting of the British Medical Association, suggested that it was not heat so much that killed this vitamine as oxidation processes brought about by a rise of temperature. The proved nutritive properties of dried milk would seem to support this contention. Therefore, until more knowledge as to the vitamine content of milk had been gained, it was in the interests of public health and for the benefit of the infant population that precautionary measures, such as boiling, pasteurization and the administration of dried milk, should be taken to prevent the spread of disease. Milk is one of the most frequent vehicles for conveying infection, and as long as cow's milk is used to the extent that it is, every means must be employed to minimize the menace of infected milk. Those who insist that cow's milk is not a suitable food at any stage of existence may be right, but while its reputation remains as high as it is now, the supply must be safeguarded in every conceivable way. That is not the case in this country at the present time.

* * *

In the list of New Year honors the names of four medical men appear. The honor of knighthood has been conferred upon Dr. Charles Ryall, senior surgeon to the Cancer Hospital and to the Bolingbroke Hospital; Dr. William Hodgson, at one time mayor of Crewe in Cheshire, and well known for his services to scientific education in Cheshire; Dr. S. Squire Sprigge, editor of the *Lancet*, and Dr. Dawson Williams, editor of the *British Medical Journal*. The last mentioned names are especially to be noticed. First, because they are the first medical editors in this country to have received official recognition at the hands of the Government, and, secondly, because it is a well merited honor to British medical journalism, as well as an appreciation of the literary and personal qualities of the men themselves.

Sir S. Squire Sprigge received his medical degree from Cambridge University. He is a Master of Arts of the same University, and has the qualification of M. R. C. S. After holding several professional posts, he joined the staff of the *Lancet* in 1893, and became editor in 1908. He is the author of a treatise on medical politics, entitled *Medicine and the Public*, and also of books relating to medical and educational matters. He has written some fiction. One book of this nature which was brought out some eighteen years ago had a considerable vogue, displaying much ingenuity of plot combined with imagination of a high order. He occupied the position for some years of secretary to the Society of Authors, founded by his friend Sir Walter Besant, whose biography he wrote, by the way. For four years preceding the war he served as chairman of the Society of Authors. The editor of the *Lancet* may be fairly classed among the more prominent of modern literary medical men.

Sir Dawson Williams had a distinguished medical career during his student days and after taking his degree became an authority on diseases of children. He has been editor of the *British Medical Journal* since 1898 and is consulting physician to the East London Hospital for Children. He was educated at University College, London; was M. B. with honors, B. S. 1879, M. D. 1881, University of London; F. R. C. P., London; Honorary D. S. C., University of Sheffield, 1908; Fellow of University College, London. His *Medical Diseases of Infancy and Childhood* was published in 1898.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, FEBRUARY 5, 1921.

MIND AND BRAIN

It is a little out of fashion to talk of parallelism between mind and body even if one mentions it only to discredit it, yet it still forms a murky background to throw into clear relief Bergson's far simpler explanation of how mental activities find their practical expression through the body. He speaks of the whole body as if it "were simply made use of by the mind," but he discusses chiefly that special portion of it designated the brain. Here the action has seemed so confusingly close to mind itself that uncertainty of terms as well as darkening of thought has long existed.

The process of intellection, of inserting oneself in things through a schematic idea, or of following back for its free associations, becomes more understandable if the brain is considered merely as a serviceable mechanism. The free use of memory, so necessary to the man of action, needs no further explanation than this, nor does the repression which no longer merely withholds the superfluous, but which overreaching itself prevents the necessary outpouring of the mind's activity.

The brain is not responsible for the overflooding or for the withdrawal of material. Of course an actual lesion may impair the machine, but that is a special story. It does not change the fact that still the active agent is the mind and always the mind, not coequal with the brain, but always overflowing the cerebral life, as Bergson puts it. The mind is the storehouse and the creator of impulse and of idea. The brain can only act according to its dictates. Bergson speaks of the brain as of a machine by which can be extracted "from the mind what is externalizable in movement, inserting the mind into this motor frame (the body.)" Then too he speaks of it as a veil interposed against that crowding of the past which would otherwise overwhelm or at best sorely confuse the present action. "Fortunate are we to have this obstacle; infinitely precious to us is the veil! The brain is what secures to us this advantage. It keeps our attention fixed on life; and life looks forward; it looks back only in the degree to which the past can aid it to illumine and prepare the future." Here again Bergson is speaking only of the ideal condition. The masking of the past, the permitting of it to emerge may be sorely interfered with. It is important then to know if the machinery is impaired. It is even more important to know if the mind has itself disturbed these tasks, because its possibility for such disturbance is so much greater. Not parallel but infinitely simpler, with all its complexity, is this organ which mind has created to do its bidding.

MENINGEAL PHENOMENA IN APICAL PNEUMONIA

In debilitated subjects, alcoholics, diabetics and children, the pulmonary apices should always be carefully auscultated in all febrile manifestations and especially in acute processes presenting nervous manifestations. It is possible that at first nothing may direct the physician's attention to the lungs, but from the onset crepitant râles should be searched for, as their presence is of the highest diagnostic import. It is also necessary to detect any pulmonary localization of the pneumococcus which may be masked under the cloak of eclamptic or meningeal symptoms. Other affections seated in the pulmonary apices may have a certain resemblance to pneumonia, and therefore it is necessary first to establish the exact nature of the lung lesion. In elderly subjects the diagnosis is sometimes difficult, no positive sign being manifest, but since pneumonia is the natural end of old people the patient should be submitted to a daily auscultation and the lesion, no matter how minute, will finally be discovered. When the diagnosis becomes difficult, fibrin diagnosis and lumbar puncture should be used and although the results obtained by either of these procedures are not always conclusive, they will at least give many excellent data.

Lumbar puncture may be impossible if the patient is too restless, but when it can be done, the fluid withdrawn may merely be cloudy or purulent. In these circumstances the diagnosis is evident, but in many cases of bronchopneumonia or pneumonia with meningeal symptoms it is very difficult to establish. The possibility of no change of the cerebrospinal fluid, even in confirmed meningitis, must not be lost sight of. The lymphocytosis is usually less marked in pneumococcal meningeal accidents than in tuberculous meningitis, and with Percheron and Voisin, it may be said that although lumbar puncture does not permit one to settle all the difficulties one encounters, it reduces very considerably the number of cases in which a diagnosis cannot be made.

Culture and inoculation, excellent procedures in experimental pathology, give tardy information to the clinician, and the evolution of the disease will have given him all necessary indications long before the laboratory results can be reported. Blood examination gives few data. In purulent meningitis, although there is often a marked leucocytosis, it must not be forgotten that pneumonia itself may cause the same phenomenon. If an examination of the optic papilla can be made it should invariably be essayed; however, although edema of the papilla is a sign of some cerebral complication it gives no indication as to its nature. When possible, it is also important to examine the ears, since Voltolini's disease may produce symptoms similar to those of meningitis.

The onset of the affection is often insidious in apical pneumonia, quite unlike that of basal pneumonia, which has a single chill. Passage to the chronic state, rare in pneumonia at the base, is not uncommon in the apical form. A termination by abscess formation is principally met with in pneumonia of the apex, but even here it is most uncommon. In spite of the importance of the meningeal symptoms all precautions should be taken before making the diagnosis of meningitis. It must not be forgotten that besides the meningitides, there is also meningism, a condition which gives rise to accidents exactly simulating those of meningitis, although there are no organic lesions of the meninges.

This syndrome has been perfectly described by many observers, especially the French, and this process has been invoked for explaining all the accidents observed during the evolution of infectious diseases. Meningism has been described by Albarel, Babeau, Berge and Hutinel in pneumonia and bronchopneumonia and by other observers in influenza, typhoid, scarlatina, measles, erysipelas and smallpox. Nearly all infectious diseases with sudden onset produce convulsions in children and delirium in adults.

CONSIDERATION OF QUALITY OR QUANTITY IN BIRTH RATE.

Falling birth rates are being deplored by highly civilized nations, including France and Great Britain. A falling birth rate is a sign of high civilization or of decadence, according to some. For many years a controversy has been going on between those who hold that plenty of children are a *sine qua non* of prosperity and those who contend that quality is of more account than quantity. The most deplorable feature of the situation is that generally speaking it is the less fit that survive and the most fit that tend to die out, or rather, it seems that those who are termed the less desirable members of the community have the largest families and will in the course of time swamp the educated and cultured classes. This process is going on steadily in this country. As C. Killick Millard, M. D., in opening a discussion on the falling birth rate at the British Sanitary Congress held in Birmingham in August last, pointed out this decline is not due to any reduction in natural fertility, nor, to any appreciable extent, to alteration in age at marriage, but rather to the deliberate adoption of birth control principles and practice by a steadily increasing proportion of the population, of course, notably in Great Britain, this reduced birth rate has been almost counterbalanced by a fall in the death rate.

Before attempting to answer the question as to what should be our attitude toward the fall in the birth rate Dr. Millard gives it as his opinion that at the present stage of the world history with the new ideals which have arisen out of the war and in face of the lessons taught by the matter of the birth rate is international and must be regarded from the point of view of the comity of nations.

One argument against a high birth rate, and it seems to be a strong one, is that from earliest times down to the present one of the most basic, fundamental and farreaching predisposing causes of international strife is pressure of population. Moreover, as Millard shows there are virtually only three alternatives before any growing country with circumscribed territories. 1. Expansion at the expense of some other country. 2. Increase in the death rate in order to balance the birth rate. 3. Reduction in the birth rate. Germany attempted the first alternative. Most oriental nations adopt unwittingly, the second alternative, while France and most other civilized countries are adopting the last alternative. Millard is frankly and firmly in favor of birth control and argues that Great Britain as a member of the League of Nations, must regard her great selfgoverning dominions as the natural outlet for Europe during the present and future centuries. Willard also justifies birth control from the ethical point of view and ended a forcible address by maintaining that apart from the present dysgenic effect of the falling birth rate, due to its differential incidence upon the upper and lower classes of the community, there is little need to deplore the falling birth rate. According to his views, it was inevitable that it should fall if the death rate was to be permanently reduced.

The weakest part of Dr. Millard's address is that unless all nations adopted birth control the ones which did adopt it would be virtually committing race suicide in face of the tremendous increase of some peoples. On the other hand, it is better to have few children who can be brought up in a healthy manner and trained to earn a good living than to have a big family brought up under conditions which militate against them physically, mentally and morally. It is a difficult problem to solve even on paper.

PHYSICIAN AUTHORS: DR. CHARLES ALEXANDER EASTMAN.

The most prominent literary spokesman of the Indian race is Dr. Charles Alexander Eastman. He was the first author to give us first hand pictures of the old Indian tribal life of North America and in all probability he will be the last. His achievement will remain unique because there no longer is any tribal life in the old, true sense. The reservation Indian of today, garbed in store clothes and otherwise bridled by the conventionalities of civilization, is a far cry from the wild children of nature who roamed in practically undisturbed possession of the ancestral wilderness. The ways of nature are slipping from their grasp. The old habits are rapidly dying out, but Dr. Eastman has set down with engrossing skill an accurate record of them, and there was none better fitted than he to do it. Before he began rubbing elbows with the white man he spent fifteen years in the forests and on the plains, living by the chase and educating himself in all the arts and wiles of a true Indian warrior and hunter. There he learned all the ways and wisdom of the inscrutable red man and later in life, through the development of a surprising gift of literature, has embodied his experiences in nine interesting volumes, some of them autobiographical, some historical, some descriptive of old Indian customs and some of them collections of legends and fairy tales. They are captivating books written in vivid, clear cut English, presenting intimately, as no white historian could present, the primitive Indian's life, ideals and aspirations. They have, too, an ethnological value which gives them additional importance in our literature.

Eastman's first book, and in many respects his best, was *Indian Boyhood,* in which the author describes his own boyhood training, playmates, games, hunting and forest adventures, dances, feasts and story telling. This was published in 1902 and has gone through several editions. It still is selling steadily. It was through the influence of his gifted wife, Mrs. Elaine Goodale Eastman, author of several volumes of poems and sketches, that Dr. Eastman was persuaded to write *Indian Boyhood* and the volume which followed it, *From the Deep Woods to Civilization,* also autobiographical. Mrs. Eastman, member of an old New England family, and the doctor were married in 1893, at which time Mrs. Eastman was supervisor of the Pine Ridge Agency schools in South Dakota and Dr. Eastman was government physician there. She acted as advisor and critic for her husband in his maiden literary efforts and subsequently they collaborated in writing *Wigwam Evenings,* a volume of Sioux folk tales and other writings. Among Eastman's other volumes are *Old Indian Days, Red Hunters and The Animal People,* depicting what may be called the human side of wild animal life, and *Indian Heroes and Great Chieftains,* which tells the life stories of fifteen of the most noted leaders in Indian history.

Dr. Eastman was born in a Sioux tepee in Minnesota about sixty-six years ago. His father, Many Lightnings, a fullblooded Sioux brave, was one of the participants in the Minnesota massacre, in and about New Ulm, Minn., in 1858. His mother, a halfblood, whose English name was Nancy Eastman, died during his infancy. Charles was about four years old when the New Ulm massacre took place, and when his grandfather and an uncle fled to Manitoba they took young Eastman with them. For more than ten years they and a band of Sioux irreconcilables roamed the Canadian wilderness. When the boy was about fifteen years old his father, who in the meantime had embraced Christianity, found him and brought the boy back to South Dakota, where he spent about three years in mission schools. He was then sent to Beloit College (Wis.) and later to Knox College, Galesburg, Ill., and finished his general education in 1887 after a four year course at Dartmouth College. He immediately entered the Boston University school of medicine, in 1887, and was graduated at the head of his class, and was class orator, in 1890. In college he not only was a remarkable student but a famous athlete as well, breaking several records. Long distance running, for which his Canadian life had well fitted him, was his specialty.

Within a few weeks after his graduation Dr.

Eastman was appointed government physician at the Pine Ridge Agency and served there throughout the Ghost Dance War (1890-91), the last uprising of the red man in the United States. Under his regime he built an agency hospital and inaugurated many reforms. Subsequently he practised medicine in St. Paul, Minn., and for three years had sole charge of the Indian field for the International Y. M. C. A. From 1900 to 1903 he was government physician at the Crow Creek Agency and for the next six years headed a commission appointed to revise Sioux family names, in preparation for the coming citizenship of the Indian. In this work Eastman strove to perpetuate in the new name some trace of the old. When the name was not too long in the original tongue he retained it, as in Matoska, meaning White Bear. But Tateyonakewastewin, meaning, She who has a beautiful home, was turned into Goodhouse. Rotten Pumpkin became Robert Pumplan and Bobtailed Coyote became Robert T. Wolf.

For the past fifteen years Dr. Eastman has done little medical work, but has devoted himself to writing, lecturing, camp work and welfare work on behalf of the Indian. He has been president of the National Society of American Indians and was an ardent worker on behalf of full citizenship for the Indian. He now resides in the historic old college town of Northampton, Mass., where his wife spent much of her girlhood. He has been especially interested in the scout movement, and is a special field scout commissioner. His book, *Indian Scout Talks,* is a guide for boy scouts and girl scouts. Recently he was elected a trustee of the National Community Board.

There is little about Dr. Eastman to remind one of his savage antecedents. He is a man of cultivated appearance despite sharp cut features and the bronzed skin of his race, and there is about him a certain dignified grace and deliberate, low voiced manner of speaking, which coincide with one's ideas of what an Indian ought to have in the way of outward personality. Otherwise the impression conveyed is that of a selfcontained, retiring scholar to whom the warwhoop and the tomahawk are as foreign as anything well could be. Decidedly, one would expect a dissertation on Shakespeare and the modern drama from the gravely smiling lips, rather than the traditional warwhoop.

There is one other Indian physician who has written a number of books, Dr. Carlos Montezuma, of Chicago, editor of the Indian magazine, *Wassaja,* and author of *The Indian of Today and Tomorrow* and *Let My People Go.* Dr. Montezuma, who is an instructor in the Chicago College of Medicine, and a noted specialist on stomach and intestinal diseases, was born of Apache parents in Arizona in 1867, was captured when he was a baby, educated in Northern schools and got his medical degree in Chicago Medical College in 1889.

THE BUSY PRACTITIONER

A cryptic phrase, the busy practitioner, and one of not always the most happy meaning. Strangely enough it seems to be applied equally to all physicians, whether of recent or long practice, as if they were all busy. If so universally applied it must be deserved. But if deserved it can hardly be interpreted in the usual sense. In the newly fledged practitioner we fear it means at bottom a pretense at business which is not possessed, in which case the patient receives a hasty overhauling and more hurried help. In the case of the established physician it seems to signify that the number of patients attended comes dangerously near being so many that their wants cannot be efficiently taken care of.

There is much talk these days of scarcity of physicians, a talk born especially of influenza experience, though often of the personal disapproval of the local doctor by a small group of the community. With the passing of some of the communicable diseases the need for the physician of the busy type is fast decreasing. With a competent health officer, a diagnostic bureau and plenty of public health nurses the need for the busy practitioner will lessened. That some parts of the country have not reached this healthful stage of development is indicated by a conversation overheard in a railway coach in a middle western state. Two women were discussing the merits of the local physicians. "I have no use for Doctor D——," remarked one of them. "Well," returned the other, "he may not be much good in other diseases, but no one can beat him on typhoid fever." In other words, here was a community so plagued with that disease in the twentieth century that it has its specialist in this preventable malady.

Doubtless in such a region the busy practitioner is all that is desired, and efforts on his part to reduce the number of his hasty visits would meet with small approval from his patients and hence be disastrous to himself, but the earlier the word thorough comes to be substituted for busy the better. This can only be done by being thorough, by preaching prophylaxis as well as prescribing pills, and by charging proportionately. When it comes to the physician who actually has more patients then he can thoroughly care for, he owes it to the rising generation of doctors to introduce them to a share of his work, which may, indeed, often be better done by having an assistant.

News Items.

Red Cross Work in the United States.—According to an official report issued from the national headquarters, the American Red Cross Society spent $780,000 in fifty-seven large disasters in the United States in the year 1920, in which 425 lives were lost, 2,700 persons were injured, and the property loss was $11,250,000.

Psychologists Wanted in the Public Health Service.—The United States Civil Service Commission announces an examination for the position of psychologist in the United States Public Health Service, at a salary of $1,600 a year with quarters and maintenance, or $2,200 without. Applications will be received by the commission up tc March 15, 1921.

A City Hospital in the Bronx.—At a public hearing held on January 21st, the Board of Estimate and Apportionment recommended the application of the Bronx County Medical Society to erect a city owned hospital in the Borough of the Bronx. The selection of a site and the manner of financing the project were referred to the Committee of Finance and Budget.

Typhus Fever in Brooklyn.—Two cases of typhus fever were reported to the Board of Health from Brooklyn during the past two weeks. The patients, one of whom is an American, have been isolated, and steps taken to prevent the spread of the disease. Health Commissioner Copeland says that while these cases prove that typhus fever is a real menace to New York, the situation is not alarming.

Biologists Wanted by Public Health Service.—The United States Civil Service Commission announces an examination for biologist to fill two vacancies in the Hygienic Laboratory of the United States Public Health Service; salary, $2,500 to $3,000 a year. Applicants must have received the degree of Ph. D. and have had a thorough training in bacteriology, biology, chemistry, and physiology. Applications will be received by the commission up to March 15th.

New York City Health Drive.—During the second week of March a health drive is to be inaugurated in New York by the Board of Education and Department of Health, cooperating with several of the national public health organizations, as well as local health agencies. Among the meetings held during the week there will be three devoted to the subject of cancer control, the lecturers being Dr. William Francis Campbell, Dr. James Ewing, and Dr. Francis Carter Wood.

Semicentennial of the Public Health Association.—The fiftieth annual meeting of the American Public Health Association will be held in New York in November, the date tentatively announced being November 14th to 18th. The first organization meeting of this association was held in New York on April 18, 1872, and the founder and first president of the association, Dr. Stephen Smith, now entering his ninety-ninth year, lives in New York. Hence the selection of this city for the semicentennial celebration.

Poisoned by Spinach.—In Grand Rapids, Mich., twenty-two persons were made ill from poison traced to canned spinach. Three have died and the fourth victim was reported to be dying on January 27th.

Personal.—Professor Lafayette B. Mendel has been appointed to succeed Professor Russell H. Chittenden, who resigned recently as chairman of the department of physiology, physiological chemistry and bacteriology of Yale University.

Sleeping Sickness and Botulism to Be Reported.—At a recent meeting of the Board of Health of the New York City Health Department, sleeping sickness and botulism were placed on the list of diseases that must be reported to the Board of Health.

Philadelphia County Medical Society.—Dr. G. Morris Piersol was elected president of this society at its recent annual meeting, and other officers were elected as follows: Dr. Wilmer Krusen, first vice-president; Dr. Charles Scott Mill, assistant secretary; Dr. J. Morton Boice, secretary; Dr. Edward A. Shumway, treasurer.

Philadelphia Medical Club.—At the recent annual meeting of the Medical Club of Philadelphia the following officers were elected: President, Dr. Barton Cooke Hirst; first vice-president, Dr. Hobart Amory Hare; second vice-president, Dr. Alexander MacAlister; treasurer, Dr. Lewis H. Adler, Jr.; governor, Dr. G. Oram Ring; additional directors, Dr. John A. Sherger, Dr. B. Frank Wentz; Dr. Howard A. Sutton, Dr. S. MacCuen Smith, Dr. Thomas R. Neilson; secretary, Dr. William S. Wray.

Changes of Address.—Dr. George Gray Ward, Jr., announces the removal of his office to 48 East Fifty-second Street, New York.

Dr. Cheney M. Stimson announces the removal of his office and residence to 167 Harvey Street, at the corner of Greene Street, Germantown, Philadelphia.

Dr. Royale H. Fowler announces his change of residence from Brooklyn, N. Y., to 57 South Fullerton Avenue, Montclair, N. J.

Lecture on Nutrition.—Prof. E. V. McCollum, of the School of Hygiene and Public Health, of Johns Hopkins University, delivered a lecture Saturday evening, January 29th, before the Kings County Medical Society, Brooklyn, on the subject of Nutrition. This was the first of a series of monthly lectures to be given under the auspices of the medical staff of the Brownsville and East New York Hospital, Brooklyn. The latter institution will formally open its doors for the reception of patients on or about March 1st.

Italian Society of Medical Radiology.—The third congress of the Italian Society of Medical Radiology was held in Rome on October 28 to 30, 1920, under the presidency of Prof. Ghilarducci. There was a good attendance of radiologists from all parts of Italy, and an interesting program was presented, which included nearly a hundred communications. There was also an exhibit of radiological apparatus. Among those who presented papers were Prof. Bertolotti, of Turin; Prof. Perussia, of Milan, and Prof. Mario Ponzio, of Turin.

School for Convalescent Children in a Boston Hospital.—It is reported that the school committee has sanctioned the establishment of a school in a Boston hospital for convalescent children whose recovery will require several months. It was learned that most of the forty-eight patients now in the institution are able to study.

Professor Sedgwick Dies.—Professor William T. Sedgwick, of the Massachusetts Institute of Technology, dropped dead on Wednesday evening, January 26th, as he was entering his home at 282 Berkley Street, Boston, on returning from a conference at the Women's City Club. Professor Sedgwick was born in 1865, was graduated from the Sheffield Scientific School in 1877, and taught for five years at Johns Hopkins University.

English Birth and Death Rates.—The Registrar General's provisional returns for 1920 show that births in a thousand of population in England and Wales were 25.44, and in London 26.3. Deaths were 12.4 in a thousand in England and Wales and the same in London. Infant mortality in a thousand was 80 in England and Wales and 75 in London. The birth rate for 1920 is the highest of the decade, and the number of births the highest ever recorded. The death rate is the lowest ever recorded, and the number of deaths the lowest recorded since 1862, when the population was only 20,000,000. The infant mortality rate (under one year) is the lowest ever recorded.

Suicides in Budapest.—Thirty-two hundred women and 2,100 men committed suicide in Hungary during 1920, police reports for the year show. In addition, there were more than 10,000 unsuccessful attempts at suicide. The tremendous increase is causing much worry, inasmuch as the prewar figures were from fifty to sixty suicides yearly. The situation is attributed to the gradual deterioration in living conditions and the fact that the war had the effect of making human life much cheaper. Government, society and church circles, realizing the grave danger to the country, have begun a campaign against selfdestruction. Sermons on the subject are being preached in all the churches, and a special police force has been organized to keep strict watch and prevent suicides.

Civil Service Examinations.—Among the positions for which examinations will be held by the Civil Service Commission for the State of New York are the following:

Assistant medical officer, office of health officer, Port of New York; salary $1800. Candidates must be licensed physicians. The appointee will be required to reside at City Island and give part of his time to the inspection of vessels from foreign ports and examine the passengers for the detection of quarantinable diseases.

Assistant resident physician, New York Training School for Girls, at Hudson, N. Y.; salary $1680 and maintenance. Candidates must be licensed physicians.

Supervisor of child hygiene centres, of the State Department of Health; salary $3000. The duties of this position require a thorough knowledge of and training in children's diseases.

The Rhinelander Solarium.—Plans have been prepared for the new Rhinelander Solarium, which is to be erected in the neighborhood of Avenue A and Sixty-eighth Street. Several sites are under consideration, and a decision will be made at the next meeting of the board of directors. The plans call for an eight story building to contain about sixty private roms and 104 semiprivate rooms and wards. Among the members of the board of directors are Dr. Samuel W. Bandler, Dr. Louis B. Jameson, Dr. Simon Strauss, Dr. Louis F. Bishop, Dr. Harlow Brooks, Dr. Israel Feinberg, Dr. Harold A. Foster, Dr. Samuel Lloyd. Health Commissioner Copeland, in a letter to the board of directors of the Rhinelander Solarium, said that there were only about 565 beds in private sanatoriums on Manhattan Island, and that there was a constant demand for at least 2,000.

Memorial to Sir Victor Horsley.—At a meeting of the friends and former colleagues of the late Sir Victor Horsley it was decided to commemorate his services to science and the British Empire by the foundation of a lectureship or scholarship bearing his name. It was suggested that the most appropriate trustees would be the senate of the University of London, and that if a lectureship should be finally decided upon, the subject should be left widely open so as to secure the services of men distinguished in some department of public life who might consider it an honor to be the Victor Horsley lecturer for the year. Sir Frederick Mott, K. B. E., F. R. S., and Dr. H. H. Tooth, C. B., C. M. G., were made honorary treasurers; Sir W. Arbuthnot Lane, Bart., and Edward J. Domville, O. B. E., honorary secretaries. Sir Charles Ballance, K. C. M. G., is chairman of the executive committee, and among the members is Dr. George W. Crile, of Cleveland, Ohio.

Died.

Biedler.—In Baltimore, Md., on Sunday, January 23rd, Dr. Hampson Hubert Biedler, aged sixty-six years.

Bonnett.—In Denver, Colo., on Friday, January 14th, Dr. William Mervin Bonnett, aged sixty-nine years.

Brown.—In Buffalo, N. Y., on Tuesday, January 18th, Dr. John P. Brown, of Nunda, N. Y., aged sixty-eight years.

Brownfield.—In Fairmont, W. Va., on Wednesday, January 19th, Dr. James H. Brownfield, aged eighty-four years.

Edgar.—In Philadelphia, Pa., on Saturday, January 22nd, Dr. Lambert Holland Edgar, aged sixty-seven years.

Ely.—In Atlanta, Ga., on Thursday, January 20th, Dr. John Calvin Ely, of Washington, Pa., aged seventy-two years.

Henkel.—In Staunton, Va., on Monday, January 17th, Dr. Haller Henkel, aged sixty years.

Marshall.—In Pittsburgh, Pa., on Monday, January 24th, Dr. Matthew Marshall, aged twenty-seven years.

McAvoy.—In Bethlehem, Pa., on Wednesday, January 26th, Dr. James B. McAvoy, aged thirty-six years.

Minner.—In Oakland, Cal., on Monday, January 17th, Dr. W. Hinton Minner.

Ward.—In Bemidji, Minn., on Sunday, January 16th, Dr. L. A. Ward, aged fifty-four years.

Book Reviews

PSYCHOLOGY OF YESTERDAY AND TODAY.

The Soul of Rational Psychology. By Emanuel Swedenborg. Translated and Edited by Frank Sewall, A. M. From the Latin Edition of Dr. J. F. Immanuel Tafel, Tubingen, 1849. Third and Revised Edition. New York: The New Church Press, 1920. Pp. xxxiii-388.

If man's function was to discover absolute truths and set them down once for all, his task should have been finished some time ago. Now and again he has thought it was nearly completed, and has listened for the trumpet to sound the end at almost any moment. Swedenborg was of such faith, but he was also of a nature that was practically more in accord with modern thought. While he expected the end of things and thought to discover hidden finalities of truth, his was an inquiring mind which apparently joyed more in its ceaseless activity than in the ends it attained.

He flattered himself that his labors were only pathways to his desired goals, celestial ones, too, in the nature of the ends he sought. But such self-deceptions are often only the necessary veils of glory which stream over the unsoftened details of reality. There came times in Swedenborg's life when he succumbed to their numbing spell and severed himself in ecstatic visions from the practical things of earth. Yet even these transient withdrawals or the increasing mystic attitude which they presaged could not obliterate the energetic quality of his work nor falsify his striking contributions to the progressive exercise of human thought. For this rather than the attainment of fixed conceptions is the pragmatic interest in truth.

Swedenborg investigated in many directions. He wrote many books. His attempt to capture the truths of the soul's existence through knowledge of the body is written down in this thick volume. Its translation into English has in recent years been found deserving of a third edition. Two hundred years after the author's writing, many of the statements in it, as well as his acknowledged pursuit of the soul, have a strikingly naïve flavor. It would be well for us, however, before we smile, to examine closely just what scientific conceptions these statements contain.

Swedenborg is pursuing the doctrine of correspondence in order that through an understanding of the most finely elaborated anatomy of the body he may discover the soul in its intercourse with the body and know it apart from the body in its independent life. He thus proceeds to a minute consideration of the structures of the body and the origin of these structures. "The simplest fibre is the form of forms or that which forms the other fibres succeeding in order." This fibre, he argues, is the product of the first essence, which in turn is the soul, so that "this alone is what constitutes the form."

He then goes on to show that not only do the organs and all the tissues of the body have such a common origin, but that they manifest the most individual differentiation. Chiefly here may be noted his discussion of the "glandular congeries in the brain," which all participate in each sense and which are yet each one individually distinct from all others. Further, all this variety from a common unity is at the disposal of the various sense stimuli which pass on through these parts to the soul. For "the sensations flow by a natural spontaneity from the circumfluent world through the fibres in the animated world even to the soul." Physiology passes over into psychology as Swedenborg considers the meeting of sensation and action, or "intellection which is the ultimate of sensations," and which passes by certain stages into will.

After a discussion of the special senses thus at the service of the soul, their relation to perception, imagination, memory, and ideas, the difference is shown between the pure intellect and the lesser human intellect below it. This brings the reader at least into the actual relations of correspondence whereby the soul descends through gradual planes into the body, to be present in every part, and the body in turn ascends with its contributions from the "circumfluent" world to the celestial soul. This then is the basis on which the author may discuss the affections and desires from the point of view of the lower terrestrial nature or from that of the celestial soul. He may include the comparison of spiritual and of rational mind and examine the question of the freedom of the will. He permits himself also certain flights into the imperishableness of the soul.

His work contains much speculation, many rhapsodical ideas, some of which are premises, some conclusions, flowing out of his preconceived ardor for the soul's existence and nature. This is the spiritual incentive to his work. His scientific work is for its day acute and profound. It presupposes diligent research with all the means at his disposal at that time; it evinces a fertile mind psychologically and philosophically astute.

As such a work the book offers a study of great value in the history of thought. It has an even more striking significance if one stops for a moment to consider its place in the turning over of matter which goes on ceaselessly in the continuous process of intellectual activity. Today our thoughts are preoccupied with the evolution together of body and mind. We ponder the forces which produced the body we know. We consider its interrelation with the mind that functions through it. We question how much the needs of developing organisms registering themselves through that mental background were again forced out into the organism's further development. Then we watch mind and body as they continue to react upon one another. And again we question the coming dissolution of their partnership.

Has not Swedenborg only preceded these questions by some two hundred years? His statements today have grown quaint; his speculations seem sometimes swayed out of the pathway of sober fact. Are not his explanations, nevertheless, even his now antiquated conclusions, a stimulus to our own thoughts? They are in this book close enough to many established facts and vital enough to get unsolved questions to excite our profound reverence.

THE COLLOIDS.

Colloids in Biology and Medicine. By Prof. H. Bechhold, Member of the Royal Institute for Experimental Therapeutics in Frankfort a. M. Authorized Translation from the Second German Edition, with Notes and Emendations, by Jesse G. M. Bullowa, A. B., M. D., Assistant Clinical Professor of Medicine, Fordham University; Adjunct Professor of Clinical Medicine, New York Polyclinic School and Hospital; Visiting Physician, Riverside Sanatorium; Associate Visiting Physician, Willard Parker Hospital. Fifty-four Illustrations. New York: D. Van Nostrand Company, 1919. Pp. xiv-464.

Only in comparatively recent times has science taken possession of the colloids, although this field embraces our own bodies, the foods we eat, the clothes we wear. The extent and variety of activity of these colloids, the variety always more or less in flux, have a significance in the problems of our existence well worth the more intensive study which chemists are devoting to them.

This voluminous study of Bechhold, deserving of the sympathetic translation it has received, modestly professes to be only an outline of the problems involved. It reports the inroads which have been made into the subject in the effort to obtain detailed knowledge of colloids. It seeks to state clearly their relation to that other group of matter of which we, along with the material necessities of our existence, are formed, namely, the crystalloids. It is the author's task in part to make plain the fact that this relationship is not one of fixed antithesis, but one, rather, with every degree of transitional interaction between the two forms.

He defines colloids, and in extending his definition throughout the entire discussion he reveals the unceasing changeableness of colloids to serve functional needs. He emphasizes the importance in this connection of double phase surface forces, which are discussed at length. The interface relation between two surfaces is an energy phenomenon always at work to modify the substances and cause the great changeableness manifested. Adsorption, with all its relation to vital processes, falls under discussion here as a condition of distribution in which the surface phenomena come into play. Other physicochemical phenomena receive explanation in their relation to the important functional relations of colloids. These are questions of size of particles, molecular weight, osmotic pressure, conductivity, all examined as means of obtaining greater knowledge of colloids and their place in structure and activity. Methods of research are still more fully taken up, as well as the various properties of colloids, the appearance of movement in them, their consistency, and so on.

This earlier portion of the book is a preparation for the more detailed study of colloids in their biological place in the living organism. They are first examined in the various groupings of food substances, lipoids, proteins, carbohydrates, with the transitional relation to crystalloids so important in digestion and other processes. A chapter is devoted to the enzymes as "tools for the necessary chemical breaking down or building up of molecules." Similar study is given to immunity reactions, with emphasis upon the importance of understanding them thus structurally and functionally through the colloids.

The latter half of the book is then taken up with the study of colloids and their properties in the constitution of the living organism itself. This is a study of the water content of the organism and its distribution in health or in pathological conditions, the phenomena of its circulation, also that of salt and other material. Other metabolic phenomena are likewise treated. The explanation of growth in terms of colloids is given a chapter, and this is followed by a brief chapter on the cell with its protoplasmic structure. Movement of organisms along with the functional activities, such as respiration and circulation, are also reviewed from the same colloidal point of view. Special attention is given to secretion and excretion. Nerve tissues are briefly considered, including the cerebrospinal fluid. Toxicology and pharmacology are similarly discussed. The final chapter is one on the microscopical technic to be observed in such studies.

Constant change of structure takes place in the interests of condition and function. One expects to find in so sympathetic a study of these phenomena something more of the suggestion of the entire dynamic picture of the constant change which constitutes life. There is some disappointment that the closer as well as the fuller relation between biology and medicine has not been pressed more upon the attention. The matter of inner secretions is very briefly touched upon, hardly with reference to the much more that remains to be sought out and said. Meagre, too, is the reference to neurology, as if this were not a territory interallied through physicochemistry with all these other fields examined. Yet these interests are not excluded, and here, as elsewhere, the writer has attempted to record the actual findings of those who have made an approach to the underlying chemical facts. He does not pretend to do more than to "indicate the beginnings already made and suggest future studies." He has certainly presented his material in a manner to convince the student of the fertile field lying ready both for improved practice of medicine and for stimulating interest in the marvels of the organic and of the inorganic world.

NERVES.

Nerves and the Man. By Charles Loosmore, M. A., Brown Scholar at Glasgow University. A Popular Psychological and Constructive Study of Nervous Breakdown. New York: George H. Doran Company, 1921. Pp. x-223.

Some hundreds of years ago a faint excuse might have been offered for a book of this character. The only reason for its existence, even in the remote past, would be that the author knew no better; that he was trying to offer some solace to the nervous individual. In this small volume we find much loose thinking, many dogmatic dictums and statements scientifically proved untrue. On the whole the presentation is a messy one. The author has closed his eyes to the progress made by neurologists throughout the world. He has not even attempted a presentation of the most reactionary, but worked out a molelike underground system of his own. Fortunately, the physician today has access to many works on neurology and psychiatry which are of real value and he need not be dependent upon this well bound but stupid book.

SPOILS OF THE STRONG.

The Spoils of the Strong. By Eleanor Talbot Kinkead (Mrs. Thompson Short). New York: The James A. McCann Company, 1920. Pp. 308.

This book can be recommended to woman patients who need something uplifting and who are not too particular about the literary value of what they read. It is a cross between *Pollyanna* and *Tristram and Iseult,* and it combines nobleness, sublimation, tragedy and romance in a concoction which ought to please women who go in for that sort of thing.

The persons of the story are a beautiful southern girl who is insistent on idealism and uplift, a tempestuous young poet who shrivels up into a terrible cynic when the girl, after their quarrel, marries someone else; a decorative and cold woman who is pictured as a sort of intellectual demon, and the first girl's husband, a goodnatured young person who is injured in an automobile accident the night of his marriage and who knows nothing of the outraged romance and sublimation being indulged in respectively by his wife and the poet. All these things happen in the south, the scene shifting from North Carolina to Kentucky, but no matter where it is the people are invariably noble and wellbred, with the exception of the intellectual vamp. Something of the hospitality and charm of southern life slips into these pages, but the author has no sense of fundamentals. She is consciously genteel, and takes all the highfaluting utterances of her characters with perfect seriousness.

To know what this book lacks, it is only necessary to read Hergesheimer's lovely story, *Linda Condon,* which also treats of a woman and an artist who love each other and are kept from marrying by the woman's unreadiness until it is too late and she is married to someone else. *Linda Condon,* also, is the study of a sublimation, but there is a vast difference in the conception and the development of the theme. Hergesheimer shows his sculptor as achieving a certain rugged grandeur in his work, but at a tremendous sacrifice, and for the woman there is nothing but a sense of unreality. Miss Kinkead, however, sacrifices the dignity of her theme to a happy ending, kills off the injured husband, sends the poet hero to war even though he is an avowed pacifist, and throws the poet and the lady into each other's arms in one of those unlikely clinches that are the joy of the movies. Still, there is the uplift!

THE ADVENTUROUS LADY.

The Adventurous Lady. By J. C. Snaith. New York: D. Appleton & Co., 1920. Pp. 321.

This is one of those rollicking yarns in which the marquis's daughter and the obscure governess, going to houses where each is unknown, change places with each other and thus give rise to a host of complications and a flurry of wedding bells. But *The Adventurous Lady* has certain points of superiority over the usual newspaper supplement tale of this character. In the first place it is written on lines of broad farce. Even the two heroines are represented as unconsciously amusing persons, and the "old tabbies" who are the host of one and the employer of the other are drawn with a rich and malicious mirth. The sentimental moments beneath the angle of the stairway are passed over with a light touch.

In the second place, nobody is deceived for very long by the selfassured young person who comes as the new governess, and by the timid, shrinking bud who poses as the Lady Elfreda. The Lady Elfreda herself is so archly assured, so independent, and so much more the woman of the world than her employer, that she is given the sack within a week. On the other hand, the little governess, masquerading as a peer's daughter and forced to take the leading part in some private theatricals, leads her housemates to the opinion that she is amusing herself at their expense, or that she is "cracked," or both.

Mr. Snaith's somewhat malicious sense of humor has full play in the denouement. The pseudo Elfreda is beloved of a selfmade peer, aged forty-five, and when he finds that she is only a governess, after a moment of horror he marries her all the same. As for the real Elfreda, she becomes interested in an obscure young man who had made a name for himself only by the accident of the war. Her moment of horror comes when she finds that he is the son of her father's butler, but she, like the homemade peer, is game. Mr. Snaith has a few words here about the Lady Elfreda wanting to escape from the snobbery and empty caste system of the aristocracy, but these are positively the only serious periods in the book. There is, of course, neither psychological nor social nor any other import to this book, but it is a highly diverting tale for a frivolous moment.

◆

New Publications Received.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

COLLECTED ESSAYS AND REVIEWS. By William James. New York, London, Bombay, Calcutta and Madras: Longmans, Green & Co., 1920. Pp. x-516.

PULMONARY TUBERCULOSIS. By Edward O. Otis, A. B., M. D., Professor of Pulmonary Diseases and Climatology, Tufts College Medical School, Boston; Formerly Visiting and Consulting Physician to the Massachusetts State Sanatorium (Rutland), etc. Second Edition. Boston: W. M. Leonard, 1920. Pp. 212.

A SYNOPSIS OF MEDICINE. By Henry Letheby Tidy, M. A., M. D., B. Ch. (Oxon.), F. R. C. P. (Lond.), Assistant Physician to St. Thomas's Hospital; Physician to the Great Northern Hospital; Formerly Assistant Clinical Pathologist and Medical Registrar to the London Hospital. New York: William Wood & Co., 1921. Pp. xv-952.

FRENCH-ENGLISH MEDICAL DICTIONARY. By Alfred Gordon, A. M., M. D. (Paris), Late Associate in Nervous and Mental Diseases, Jefferson Medical College; Late Examiner of the Insane, Philadelphia General Hospital; Neurologist to Mount Sinai, to Northwestern General, and to the Douglass Memorial Hospitals, etc. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. 161.

HYGIENE. By W. Wilson Jameson, M. A., M. D. (Aberd.), M. R. C. P., D. P. H. (Lond.), Medical Officer of Health and School Medical Officer for the Urban District of Finchley; Lecturer on Sanitary Science at the Hackney Institute; Examiner in Hygiene to the National Health Society, etc., and F. T. Marchant, M. R. San. I. Assistant in the Department of Hygiene, University College, London; Lecturer on Elementary Science at the National Health Society, and Assistant Public Analyst. With Eighteen Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. vii-404.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Endocrinology in Pharmacodynamics.—R. A. Bate (*Medical Review of Reviews,* June, 1920) says that the physiological action of every living cell is conceded to be under the control of internal secretions. Medicines administered by the mouth, stomach, rectum, respiratory tract, skin, and veins, by arterial transfusion or by rays, all produce their effect by endocrine activity, which is due to the medicine having been brought to its place of assimilation by ameboid leucocytes or body corpuscles. These body corpuscles wander everywhere through the spaces of connective tissue; hence the dire consequences of connective tissue changes to an organ. If a drug is administered by the skin, mucous or serous membrane, there is probably a selective leucocyte affinity that determines the carrier. If direct administration within the tissues is practised, probably an enforced leucocyte activity results. It is probable that prolonged hypodermic medication may thus result in harm. Drugs introduced into a body without ductless glands would probably produce no action of any kind. Drugs introduced into the body with inactive ductless glands, without the help of artificial endocrine substances, would probably have little or no effect. Drugs introduced into a system with active endocrine organs produce their physiological action by stimulating or inhibiting those hormones or chalones that control the physiological or inhibiting action of cellular life.

Antidiphtheritic Serum as a Preventive of Orchitis in Mumps.—S. Bonnamour and J. Bardin (*Presse médicale,* December 22, 1920) begin by referring to the experiences of Salvaneschi, who administered injections of 1,000 units of diphtheria antitoxin — sometimes repeated — at the onset of bilateral orchitis in fourteen cases of mumps. Twenty-four hours after the injections the fever receded, and the swelling of the testicles disappeared in a few days. In twenty-six subsequent cases of mumps, antitoxin was injected on the day of admission and the next day. In each case the parotid enlargement disappeared in a few days, and no instance of orchitis developed. Reviewing numerous statistics regarding the incidence of orchitis in mumps, the authors note that it varies in different epidemics from ten to twenty-five per cent., the average being about twenty per cent. Of the cases thus complicated, one half terminate in testicular atrophy. In a series of sixty-five cases of typical mumps in soldiers the authors regularly injected twenty mils of diphtheria antitoxin on admission. In most instances distinct subsidence of parotid swelling and reduction of temperature occurred two to four days after the injection. Only eight patients had even slight testicular pain, and of these, five had already had incipient orchitis on admission. In these five cases the injection of serum brought rapid relief from pain, and after a second injection on the next day the orchitis appeared to be arrested. In the other three cases, in spite of the injection of serum, slight pain developed in the scrotum three or four days after admission, but the orchitis remained mild, without testicular swelling. Excluding the five cases of orchitis before admission there remain sixty cases of mumps with but three cases of orchitis, or five per cent. The antitoxin seemed also to prevent all the other complications of mumps, which otherwise occurred with great frequency in the military hospitals. The authors strongly recommend further trial of diphtheria antitoxin as a preventive of orchitis in mumps. It might also be found to obviate complications in other diseases of unknown causation, such as measles and scarlet fever.

Signs and Symptoms of Hypopituitarism.—Stewart R. Roberts (*Southern Medical Journal,* August, 1920) says that undergrowth, dwarfism, dysgenitalism, feminine hirsuties, feminine type skeleton, lack of secondary sexual characteristics, genital atrophy and impotence, headaches, languor, weakness, may appear in varying degrees in different cases at different periods. The classical signs and symptoms of hypopituitarism are subnormal temperature, dry skin, adiposity, low blood pressure, slow pulse, constipation, amenorrhea, drowsiness, inactivity. Lack of attention, impairment of memory, actual dulness, mild psychoses to actual convulsive seizures with epileptic attacks may occur. The cause may be glandular deficiency of one or both lobes, a pituitary tumor with damage of the gland, a neighborhood tumor or hydrocephalus with pituitary pressure. The symptoms of intracranial tumor may be more prominent than those of pituitary deficiency. Infantilism, dysgenitalism, obesity, symptoms of intracranial tumor warrant pituitary study.

Improvement in Graves's Disease Subsequent to Severe Focal Infection.—Theodore L. Squier (*American Journal of the Medical Sciences,* September, 1920) reports two cases of hyperthyroidism in which complicating infections first caused a marked increase in the severity of the thyroid symptoms, followed, after the acute infection had subsided, by striking improvement, if not cure. It is not improbable that the improvement seen was due to actual loss of secretory tissue through postinfectious sclerosis of the gland.

Effect of Feeding the Pineal Body upon the Development of the Albino Rat.—Warren R. Sisson and John M. T. Finney, Jr. (*Journal of Experimental Medicine,* March, 1920) fed the pineal bodies of young calves to albino rats, beginning at the age of three weeks and extending over periods of from three to six weeks. No gross developmental changes were noted, and microscopic examination of the endocrine glands and reproductive organs showed no variation from the normal. It is therefore concluded that feeding the desiccated pineal body of young calves to young albino rats fails to produce any effect upon the early development of these animals.

Glycosuria During Pregnancy.—R. S. Cron (*American Journal of Obstetrics and Gynecology,* December, 1920) notes that among 2,200 consecutive obstetrical cases, eighty-eight, or four per cent., gave a positive test for some form of sugar during either pregnancy, labor, or the puerperium. A positive reaction with Fehling's solution during pregnancy does not necessarily indicate the presence of diabetes mellitus, but is usually due to a lactosuria or alimentary glycosuria and rarely to renal diabetes. Lactosuria is common during both pregnancy and the puerperium; it is entirely physiological, and must be differentiated from the various types of glycosuria. From thirty to fifty per cent. of pregnant women are less tolerant to glucose than nonpregnant individuals; they have no hyperglycemia and are not true diabetics. Glycosuria may be due to a lowering of the renal threshold for sugar. Albuminuria and glycosuria may accompany one another or alternate without hyperglycemia. Diabetes and albuminuria may coexist; this complication calls for the immediate interruption of pregnancy. Where diabetes and syphilis complicate pregnancy the treatment indicated is both dietary and antiluetic. Pregnancy may occur in diabetic women or diabetes become manifest during pregnancy; in either case the complication is a serious one, a considerable percentage of such patients dying in coma or collapse, succumbing to some intercurrent infection, or dying during successive pregnancies. The fetuses of diabetics, apart from abortions and premature deliveries, are stillborn or die within a few days after birth in about fifty per cent. of the cases. Fat is the most important factor in the production of acidosis; it should be reduced to a minimum or omitted; its only use is in bringing the caloric requirement of the patient up to normal. When sugar appears to a slight degree in pregnancy it should be carefully watched and controlled by diet and, unless a carbohydrate equilibrium can be maintained, pregnancy should be terminated. The advantages of Cæsarean section under gas oxygen should be kept in mind.

Observations on the Recrudescence of Influenza.—M. E. Alexander and E. L. Macdonald (*American Journal of the Medical Sciences,* November, 1920) analyzed 100 consecutive cases of influenza, in forty-eight of which lobar pneumonia occurred, and in eighteen there was extensive bronchitis with several areas of bronchopneumonia. In only two was there a history of influenza during the 1918 epidemic. The bacillus of Pfeiffer was isolated from the throat cultures in fifty-seven per cent. of the cases examined, and in the sputum of sixty-two per cent. In the pneumonia cases, the incidence of this bacillus in the throat and sputum was about the same as in the uncomplicated cases. The pneumonias differed from a similar series of pneumococcus pneumonias by slow onset, frequency of epistaxis, infrequency of herpes, infrequency of rusty sputum, low leucocytosis, infrequency of pleuritic pain, frequency of extensive generalized bronchitis, defervescence by lysis (87.5 per cent.), and frequency of menorrhagia. Albuminuria was common in this series of cases, and an abundance of albumin and casts proved fatal in the majority of instances. The pulse rate proved of better prognostic aid than the blood pressure determinations. The study of the leucocyte count did not prove of great prognostic aid. The majority of the pneumonia cases were of Types II, III, and IV. Twelve of the hundred cases ended fatally, in all of which pneumonia occurred (twenty-five per cent. mortality). The rapid mode of spread and the numerous instances in which several members in the same household were simultaneously affected justify the opinion that the infection was epidemic in character. The prostration, headache, pain in the back, the epistaxis, the normal leucocytosis, seem to point clinically that the infections were cases of influenza. The finding of the bacillus of Pfeiffer in the throat smears of fifty-seven per cent. of cases examined, and in the sputum of sixty-two per cent., and in the blood culture in one case, adds much weight to this conclusion. The study of the sputum and the blood cultures in the pneumonia cases, as also the clinical development and prognosis, lead to the conclusion that in the majority of instances the bacillus of Pfeiffer was to a greater or lesser extent responsible for the pneumonic consolidation either by occurring in combination with the pneumococcus and allied organisms, or else by leaving a *locus minoris resistentiæ* in the lungs for the invasion of the pneumococcus and streptococcus.

Hyperuricemia in Gout and Urinary Lithiasis.—A. Chauffard, P. Brodin, and A. Grigaut (*Presse médicale,* December 15, 1920) note that excess of uric acid in the blood is the rule in both gout and nephrolithiasis. In gout the uricemia seems to be due to an insufficiency of the nucleolytic ferments or nucleases, agents intended to break down nucleinic acid into its components and set free purins. Lowered permeability of the kidneys is an additional factor promoting uricemia. Special stress is laid, however, on hepatic inadequacy as a salient cause of uric acid accumulation. Experimental work by the authors shows that the liver arrests or fixes uric compounds brought into it by the portal blood. Similarly, Perroncito has recently shown that when the liver is excised, a marked increase of uric acid in the blood occurs, whereas the urea content diminishes. The uricemia in gout appears to be due at least in part to this special form of hepatic inadequacy, with which are associated hypercholesterinemia and hyperbilirubinemia. The kidneys also seem to be impaired in nearly all cases of gout, probably secondarily, due to the irritation of these organs by excretion of incompletely broken down waste. The renal disturbance distinctly aggravates the disease, and study of renal permeability appears one of the chief prognostic factors both in gout and in nephrolithiasis. The reason why the morbid chemical condition leads to gout in some cases and to nephrolithiasis in others probably lies in variations in the local fixation of uric acid at different points in the body. In the gouty, joint fatigue, damp cold, and pressure from ill fitting footwear are well known localizing factors, while in nephrolithiasis, causes of urinary stasis in the renal pelvis possibly favor calculous deposition. At all events, it seems clear that both in gouty and calculous cases, the diet should be regulated and both the hepatic and renal functions kept under watch.

Ileal Regurgitation, Nerves, and Diet in the Chronic Intestinal Invalid.—John Bryant (*American Journal of the Medical Sciences,* December, 1920) asserts that too little attention is paid to ileal regurgitation, a condition frequently found in chronic intestinal invalids, and almost always coexisting with various forms of excessive nervous irritability. He suggests a new diagnostic sign, outlines a nonsurgical method of treatment, and records the results of such treatment in fifty consecutive patients. The usual complaints of the patient are abdominal pain of various sorts, intestinal gas, constipation, and nervous disorders. The gas is mainly in the large intestine. A generalized yellowish discoloration of the skin, especially in the distribution areas affected by Addison's disease, is usual. There is a marked dirty discoloration of the whole of both eye sockets. Constipation is spastic and usually shows definite improvement under the administration of atropine. Diagnosis may be made absolute by x ray examination. The complaint of nervousness, sometimes of most bizarre type, seems almost constant. Treatment is divided into the early, intermediate, and late stages of convalescence, and is discussed at considerable length. The immediate treatment consists of simple, bland, nonputrefying diet, with carefully controlled exercise. There are five totally distinct factors of value in treatment, which are grouped under the headings of social, mental, dietary, orthopedic, and glandular. The results in the series of cases reported were ninety-four per cent. improved, six per cent not improved.

Local Tenderness and Supraclavicular Adenitis in Pulmonary Tuberculosis.—G. H. Lemoine (*Bulletin de l'Académie de médicine,* November 30, 1920) reports his experiences with certain diagnostic signs of tuberculosis described by Sabourin in 1910. The procedures are intended to localize tuberculous foci in the apices, and consist in examining with the finger tip for circumscribed tenderness along the intercostal spaces anteriorly, at the bottom of the supraclavicular triangle, and in the supraspinous fossa; where the pain on pressure is elicited the patient withdraws his shoulder or exhibits a localized muscular contraction. Pressure should be made gently, gradually, and systematically, so as to cover every portion of the suspected areas. The tenderness on the affected side contrasts with the lack of sensitiveness on the sound side. The presence of actual tenderness distinguishes active from quiescent tuberculous lesions. The author, examining a large number of cases, found the local tenderness constantly present in tuberculous patients and absent in others. In 192 consumptives with tubercle bacilli in the sputum tenderness at the midpoint of a line drawn from the base of the neck to the acromion was always present, being especially marked during acute exacerbations of the disease, and less pronounced at other times, yet persisting for a considerable period, even after disappearance of the auscultatory signs of the disease. In four patients with cavities, who had recovered under sanatorium treatment and whose sputum was free of bacilli, tenderness was absent. In one case in which a patient had been worried because of loss of weight and had a tender point the physician, finding auscultation negative, ascribed the tenderness to a neuropathic state and ordered hydrotherapy; a week later, a copious hemorrhage, with fever and definite signs of tuberculosis showed the true condition of affairs, which had already been manifested in the tender point. Tenderness in the intercostal spaces and in the axilla was elicited in one half of all cases and tenderness above the clavicle in four fifths of the cases. Besides revealing active lesions, the tender points point to recovery when they disappear—especially when they do not return with intercurrent febrile disturbances — and constitute the best guide available to the physician for regulating the treatment and prolonging, reducing, or stopping the rest cure. Coupled with supraclavicular adenitis, the points of tenderness assist in the making of an early diagnosis of tuberculosis.

Sciatica from an Orthopedic Viewpoint.—J. Appleton Nutter (*Canadian Medical Association Journal,* June, 1920) says that the treatment of sciatica is varied, and depends on the cause. Diseased tonsils and teeth may need to be removed, a chronic prostatitis treated. An arthritic spine may need fixation, a relaxed sacroiliac joint should have efficient support, disease of the hip joint calls for immobilization. Absolute rest of the affected limb is essential. For the pain, acetyl salicylic acid is useful, as are also the salicylates and drugs of the coal tar class. Morphine should be avoided whenever possible. Counterirritation over the course of the nerve, such as the superficial application of the Paquelin cautery, mustard, and blisters, may give relief. The injection of sterile water, alcohol, or weak cocaine solution into or beside the nerve is not often practised, as damage may be done. Nerve stretching is out of favor. Baking and massage are generally useful in subacute cases. Hydrotherapy is sometimes of value, but, like electricity, more often gives only temporary relief. Anemia should be treated with iron and arsenic. A special diet is indicated only in cases of gout, diabetes, and rheumatoid arthritis of intestinal origin. The injection of sterile water into the epidural space of the sacral canal has given relief that lasted several hours.

Artificial Impregnation by Tubal Insemination.—R. L. Dickinson (*American Journal of Obstetrics and Gynecology,* December, 1920) reports that in women presenting histories or pelvic findings pointing to the sealed tube following milder types of salpingitis, entirely quiescent, injection of active semen into the uterine cavity produced no results in twelve instances. In women with no gonorrheal histories or findings, free from cervical inflammations and evident uterine, tubal, or ovarian lesions or abnormalities, living semen of the poorer grades produced no results in nineteen patients. With fairly normal pelvic organs and semen of good quality, however, five pregnancies followed and are believed to have been due to tubal insemination. The knee chest posture, a curved pipette fitting the internal os and carried nearly to the fundus, injection into the tubes, horizontal rest, and repetition three to six times, are the features of the treatment emphasized. Trial of the method may precede a resort to operation—except the operations done for external obstructions.

Thymic Hypertrophy and Syncope under Chloroform.—Bretegnier (*Presse médicale,* February 7, 1920) reports the case of a woman, aged twenty-five years, who died five minutes after the beginning of chloroform anesthesia. At the autopsy the thymus was found to weigh thirty grams. At the moment of death six grams of chloroform had been administered, and the patient was not yet wholly anesthetized, being in fact in a state of extreme anxiety. The corneal reflex was still present. Massage of the heart through the diaphragm proved useless.

Observations upon Ductless Gland Therapy.—Charles H. Lawrence (*Boston Medical and Surgical Journal,* August 5, 1920) believes that the symptoms of the early stages of disordered endocrine function are at present not well understood and therefore often overlooked. Though the symptoms of such conditions are often polyglandular in character, there exists a characteristic and recognizable syndrome for a primary derangement of each individual gland. The recognition of the syndrome is essential for intelligent glandular therapy.

Thyroid Diabetes.—G. L. Rohdenburg (*Endocrinology,* January-March, 1920) cites a family in which glycosuria was increased in intensity after the oral administration of either thyroid gland or adrenal. One member of this family was cured of glycosuria after a partial thyroidectomy. In a second case the patient had previously had a portion of the thyroid removed for exophthalmic goitre, developing glycosuria several years later. The glycosuria in this case also disappeared after extirpation of more of the thyroid gland.

Acute Thyroiditis after Erysipelas.—L. M. Weeks (*British Medical Journal,* September 25, 1920) describes a case of erysipelas in a female aged forty-six, in which patches developed on the left side of the face, neck, and scalp. Treatment with fomentations, ichthyol ointment on the scalp, and quinine and arsenic internally, caused subsidence of the symptoms, which appeared later on the right side, afterwards developing on the right buttock, then on the left. The thyroid swelled and an incision was made. Pus from the incision proved to be a pure culture of streptococcus.

New Procedure for the Prevention of Spinal Puncture Headache.—Gustav Baar (*Medical Record,* October 9, 1920) believes that the cause of these headaches is the continuous epidural leakage of cerebrospinal fluid which takes away the water pad of the brain, so that the brain rests unprotected on the bony surface of the base of the skull. This view is supported by the instant relief caused by putting the patient in the horizontal position. Baar has succeeded in almost eliminating these headaches by following up every spinal puncture with an intravenous injection of physiological salt solution, except where salvarsan was given simultaneously. The prophylactic value of these intravenous injections of .5 per cent. sodium chloride, in quantities of one half to one litre, may be gleaned from the fact that four of his patients had headaches lasting from two to sixty days without the salt solution, whereas these same patients suffered no headaches when the saline was used.

Poisoning by Arsine.—M. Bannister (*British Medical Journal,* September 25, 1920) describes a case of fatal arsine poisoning, in which the patient, a male, aged forty-six, suddenly became ill. Symptoms were marked cyanosis, shortness of breath, peculiarly smooth skin, and congested conjunctivæ. He died comatose two days later. Postmortem examination revealed enlarged heart, liver and kidneys, very hard and bloodless. The mucous linings were discolored.

Present Day Treatment of Club Foot.—W. S. Verrall (*Canadian Medical Association Journal,* July, 1920) thus sums up the salient points in the treatment of congenital club foot: Do not begin active treatment before the child is one year old. Overcorrect the varus and supination before lengthening or cutting the tendo Achillis. Open incisions for cutting or lengthening the tendons or plantar fascia are unnecessary and ill advised. Proper aftertreatment is as essential as the correction of the deformity.

Diabetes Mellitus Treated by Novarsenobenzol.—F. J. W. Porter (*Lancet,* November 20, 1920), having successfully treated a case of diabetes with salvarsan, tried novarsenobenzol intravenously in a male whose family history showed diabetes in close relatives. The patient was put on a strict diet, and a suppository of salvarsan applied. Then 0.6 grams of novarsenobenzol, followed by two doses of 0.75 grams each, all subcutaneously, caused the sugar to disappear. Weakness of extensor muscles of the left foot vanished, and the patient was cured.

X Ray Treatment in Interstitial Keratitis.—Bussy and Japiot (*Presse médicale,* December 22, 1920) refer to two cases of interstitial keratitis in children in which x ray treatment resulted in marked improvement. The treatment was found to cause rapid disappearance of pain, blepharospasm, and photophobia. The duration of treatment was only a month and a half, whereas other treatments require twelve or eighteen months. The rays were observed to bring about a more distinct clearing of the cornea than any other mode of treatment. The procedure is harmless, the rays used being passed through thick filtering layers and applied only in small doses, so that no dermatitis nor falling out of the lashes occurs even where the tissues adjoining the cornea are left unprotected. Five sittings of five to ten minutes each, at weekly intervals, proved sufficient in the authors' cases.

Treatment of Erysipelas in the Newborn.—R. Labbé and De Larminat (*Press médicale,* December 22, 1920) report very encouraging results in erysipelas of the newborn from the application of an old therapeutic measure by a new technic. The inflamed area, however extensive, is freely coated every four hours, night and day, with a four per cent. aqueous solution of silver nitrate. The skin is then covered with an aseptic or mildly antiseptic powder and a dry dressing. The treatment is continued uninterruptedly until recovery, in spite of the brown discoloration of the skin which results. The procedure is always well borne and there are no untoward consequences. The local treatment should, however, be supplemented by general measures.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting, Held in New York, March 23 to 25, 1920.

The President, Dr. CLAUDE C. LYTLE, of Geneva, in the Chair.

(Continued from page 220.)

SYMPOSIUM ON GOITRE.

Practical Points in Goitre Surgery.—Dr. GEORGE W. COTTIS, of Jamestown, N. Y., presented this paper. He said that the term goitre was applicable to many conditions. Until some medical genius solved the question of etiology better therapy must be the aim. The three important points in goitre surgery were selection of cases, anesthesia, and operative technic. For practical purposes it was sufficient to divide goitres into three classes: toxic, nontoxic, and malignant. Statistics on the relative frequency of toxic and nontoxic goitres varied because there was no standard rule of classification. In the case of true primary exophthalmic goitre there must be three things: A history of toxic symptoms beginning soon after or before the recognition of thyroid enlargement, exophthalmos, and parenchymatous hyperplasia. On the other hand, toxic adenomata might form an obvious goitre long before toxic symptoms appeared and they never caused exophthalmos. These cases should not be classed as exophthalmic goitre, even though they had a fatal termination.

Selection of cases.—Physiological goitres of adolescence and pregnancy were medical rather than surgical problems. Adolescent goitres might be prevented by the use of iodine and a large proportion disappeared without treatment. In general, nontoxic goitres should be given a chance to subside under medical treatment. Even large colloid goitres if not of too long standing would respond to medical treatment. The adenomata did not.

Anesthesia.—In some cases the method of anesthesia was the least important part of the technic, in others it was the decisive factor. In removing small goitres any method would answer. Local anesthesia added to the strain on the operator, prolonged the operation, and in cases of hemorrhage was a serious embarrassment. Dr. Cottis said that as a routine anesthetic he used Gwathmey's colonic ether. This was valuable because it was administered in bed and the patient went to sleep without realizing an anesthetic had been given. It caused less postoperative vomiting, did away with the face mask, and a minimum amount of ether was necessary. Local anesthesia was indicated in old people, in cases of large goitres of long standing, and in extremely toxic cases, as it permitted an estimation of how well the patient was standing the operation. If the patient became restless it was best to discontinue the operation and pack the wound with Dakin's solution and euresol. In local anesthesia it was by no means sufficient to secure analgesia of the field; a comfortable posture must be maintained, and a tactful nurse to apply ice cold compresses. Anyone who had operated in toxic cases with local anesthesia had been embarrassed with the thyrotoxic symptoms during anesthesia. The almost universal use of adrenalin suggested that this was a Goetsch reaction, and since the adrenalin had been omitted there were fewer symptoms of this sort.

Technic. — The technic of these operations had been so standardized that a description was unnecessary. Simple goitres might be enucleated. A lobectomy might reveal the hidden tumor. Both lobes should be searched to see that some normal tissue was left. In all general operations the posterior lobe should be left *in situ*. A lobectomy should be done under local anesthesia so as to avoid the recurrent laryngeal nerve. A lobectomy leaving the upper lobes should never be done. Tetany might develop after some surgical operations especially when the parathyroids were removed. In toxic goitres ligation of the thyroid artery was indicated. Ligations furnished an index of the patient's reaction to operation. On the other hand, in cases of a single encapsulated adenoma a ligation did very little good unless an artery leading to the tumor could be palpated and ligated.

The most difficult problem was postoperative hyperthyroidism; this was still the chief cause of mortality. It was increased by undue loss of blood, and transfusion was indicated. The best treatment was undoubtedly preventive, and the most important factor was the surgeon himself. The proper selection of time to operate, expertness in the choice of anesthesia, ligation as an index to the patient's reaction, surgical judgment in determining how much to remove and when to stop, and the dexterity which limited both trauma and hemorrhage—these were the things that spelled life or death to ten per cent. of the thyroid patients.

Surgical Treatment of Hyperthyroidism.—Dr. GEORGE E. BEILBY, of Albany, presented this paper. His remarks were confined to the treatment of hyperthyroidism and did not include cases of simple goitre, tumors or cysts. There had been a marked lowering of the mortality rate in recent years due to the careful selection of the patient and the time for operation, and of equal importance was the employment of an anesthetist skilled in the management of these cases and an improvement in technic whereby the time required for operation had been shortened. In reference to the stage operation, he said that it had been his experience that it was difficult to induce patients to submit to more than one operation for the relief of this condition. If they were benefited by one operation, they accepted that; and if they were not relieved they became skeptical of operative relief. There seemed to be an idea that the removal of one lobe was all that was necessary to effect a cure. Experience had proved that patients derived little or no lasting benefit from such operations. As to the form of preliminary treatment, there was a difference of opinion. Dr. Beilby said that in his hands ligation was not a favorable procedure as it necessitated two operations. He said that it had been his observation that wherever a portion of the gland was removed and the circulation of one lobe was left, the reaction was more severe than where a subtotal resection was done. He thought that a partial resection of the gland was not a safe procedure, and that there had been a tendency to leave behind too much rather than too little thyroid tissue. It would be desirable if some accurate means could be devised to determine the amount of gland to be left in a given case. Dr. Beilby believed that not so much depended upon the total amount of tissue left as upon its distribution and blood supply.

Dr. Beilby emphasized the following points: First, the removal of one lobe of the thyroid gland in exophthalmic goitre might give temporary relief but would not effect a cure; second, if only a portion of one lobe was left and its blood supply was undisturbed it hypertrophied and a recurrence of symptoms might be expected; third, with careful preparation and selection of time a complete operation might safely be done in most cases at one time; fourth, where sufficient gland tissue was removed the toxic symptoms promptly and completely disappeared; fifth, this relief was a permanent one if the gland tissue which remained was not left in a condition such that hypertrophy might take place; sixth, that the experience in a sufficient number of cases justified the belief that with the removal of the amount of gland tissue referred to, no symptoms of thyroid or parathyroid deficiency might be expected.

Differentiation of Tuberculosis from Hyperthyroidism.—Dr. EMIL GOETSCH, Brooklyn, said that it was his purpose to bring out encouraging surgical results in an obscure syndrome. He referred to those borderline cases in which one suspected tuberculosis but the physical signs and x ray findings were insufficient for a diagnosis. From a recent study of patients of that kind, who were supposed to be suffering from tuberculosis, he concluded that the underlying trouble was hyperthyroidism and not tuberculosis. This belief was based on the fact that these patients failed to improve under medical treatment, and rigid rest cures; on expert examination little of tuberculosis was found; these patients showed a constitutional hypersensitiveness to adrenalin; following resection of the gland there was definite improvement, on histological examination a condition was found which might be called diffuse adenomatosis in which there was an increase in the connective tissue and in the acini derived from the fetal cells of the thyroid gland—an increase in the metachondrial content.

It was found that hyperthyroidism, whether associated with tuberculosis or not, would give a positive reaction with adrenalin; tuberculosis alone would not. At operation the gland was found to be slightly adherent, which made it difficult to deliver the thyroid lobes; the gland contained a moderate amount of colloid and was friable. There was not the familiar increased consistency seen in exophthalmic goitre or the glistening appearance in colloid. One was reminded of a condition midway between, the pathological appearance being one of diffuse adenomatosis. Dr. Goetsch said that he was convinced they were dealing with a new clinical entity recognized by increased concentration of metachondria in the cells. As a result the test was valuable in borderline cases for which operation was advised, and the results justified this belief.

The operation in these borderline cases depended on the type of disease found in the thyroid gland. Dr. Goetsch thought that the fear of myxedema had resulted in the removal of too little of the thyroid. In fact, it was surprising how much of the thyroid, even up to three fourths, could be removed without producing hypothyroidism. A margin of gland tissue was left on either side to protect the parathyroids and the recurrent laryngeal nerve. An interesting differential point was that, whereas the tuberculosis case responded promptly to rest and hygiene, these mild thyroid cases were not improved after prolonged rest. In the hyperthyroid cases the patients felt better at rest but they could not resume activity without bringing on the symptoms of which they had complained.

Surgical Treatment of Exophthalmic Goitre.—Dr. EDWARD STARR JUDD, of Rochester, Minn., said that in their clinic no cases of exophthalmic goitre were called such without hyperplasia and enlargement of the gland. It was a condition of toxemia under control of the cells of thyroid. Hyperplasia was definitely shown by increase in the size of the gland, and when a part of the gland was removed the symptoms subsided; when the symptoms returned it was found that the remaining part of the gland had enlarged. In recent years the greatest improvements had resulted from a better understanding of the disease in its clinical aspects. Hyperthyroidism occurred in cycles with exacerbations of symptoms and remissions. The time to institute surgical treatment was when the patient was in a remission, never when the symptoms were increasing. Many patients could be carried over the exacerbations by rest in bed and palliative treatment, injections of boiling water, quinine urea, and ligation, which was palliative. No matter how well these patients might appear following palliative treatment, it was always best to advise a thyroidectomy as the danger of a relapse would be materially reduced. Recently the clinical picture had been depended upon to measure the toxicity, but changes in the basal metabolism now gave better results. Cures should not be reported within a short time after the subsidence of symptoms. The operation now performed was a subtotal thyroidectomy by which changed thyroid tissue was removed. This operation had the advantage of leaving a symmetrical scar, whereas lobectomy did not.

In conclusion, Dr. Judd said that he was at the present time more than ever impressed with the action of the thyroid and by keeping this in mind he believed that rational treatment might be carried out. While medical treatment, x ray exposures and radium modified the disease it was not certain just how much they altered the natural course of hyperthyroidism, whereas subtotal thyroidectomy removed changed tissue and as a result the metabolism rate was reduced to approximately normal and the symptoms subsided very quickly in a large majority of the cases.

(To be concluded.)

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

Vol. CXIII, No. 7. NEW YORK, SATURDAY, FEBRUARY 12, 1921. Whole No. 2202.

Original Communications

HYPERTHYROIDISM FROM THE SURGICAL POINT OF VIEW.*

By John B. Deaver, M. D.,
Philadelphia.

There are few subjects on which the surgeon can be less didactic as to the merits of surgical versus medical treatment than on that of hyperthyroidism; for there are few diseases that fall more easily into the medicosurgical class. And yet a discussion of the surgical aspect of the question at once calls for a somewhat didactic statement, inasmuch as a consideration of this subject would be incomplete without referring to what is often a premonitory stage of hyperthyroidism, namely simple goitre. I speak from experience, though perhaps a limited one, when I state that the majority of thyrotoxic goitres develop with simple goitre as a basis. The corollary to the statement, therefore, would be surgical treatment of simple goitre, with only enough exceptions to establish the rule. In fact, the main contraindication to surgery of simple goitre, of itself, strongly supports the argument in favor of it, namely, goitres of long standing which have caused such marked pressure and cardiovascular symptoms as to render surgery dangerous. If a patient presenting such a picture has been under medical treatment and the condition has been allowed to progress to the risky or inoperable stage, very often as a direct result of iodine treatment which occupies so prominent a place in the therapy, it is not the surgeon but the medical man on whom must devolve the duty of signing the death certificate.

Surgical treatment of basedowified goitre, as it has been termed, or of primary hyperthyroidism, has met with brilliant, immediate and remote results at the hands of experts. While a great deal of this success is undoubtedly due to skill much depends upon choosing the proper time for the operation.

The cases fall into three types, the mild, moderately severe and very severe. The disease, as is well known, runs a fairly regular course; periods of exacerbation being followed by apparent subsidence. In the first two types of cases operation may be performed at a convenient time between attacks. But in the last type the disease often causes visceral complications which, when added to the dominant symptoms, make the time to operate a matter of judicious selection. It is not necessary for me to dwell upon the significant feature of disturbed metabolism that accompanies hyperthyroidism, but I wish to emphasize the importance of a correct estimation of the metabolic rate in deciding the favorable moment for surgical intervention, and when by suitable measures the metabolic rate has approached the safety line, the individuality of each case must be considered. The cardiac symptoms, to my mind, are of greater importance in the pros and cons of operation than the renal ones. C. H. Mayo believes that a heart dilated beyond one inch presents a dangerous condition. Another vital point for success is the mental attitude of the patient so that both the preoperative régime and the postoperative treatment are of as great importance as the operation itself.

I am free to confess that compared with some of our leading surgeons my work in the surgery of hyperthyroidism fades into insignificance. I believe that those of us who have not the facilities at hand for carrying out the preparation of the patient for operation, as outlined by these men, have not the moral right to assume the responsibility of treating these cases. I think neurologists will agree with me when I say that these cases belong to a special hospital or a special department of a general hospital.

In this class of patients, Crile's anociassociation finds its most ideal application. It should be instituted from the moment the patient enters the hospital by the courteous attendant at the door and carried right through by nurses, residents, relatives, friends. The history of the case had better be taken through questioning the latter than by direct inquiry from the patient. Complete rest, isolation from anxious relatives or friends, and the presence of as few strangers (doctors and nurses) as possible, is essential. I also find it a necessary measure to enjoin upon the attending physician the proper degree of patience in waiting until the surgeon, guided to a great degree by laboratory tests plus the knowledge gained by clinical experience, decides upon the favorable time for operation. Too often I find the physician urging haste in order, as it appears, to have the matter done and over with.

The anesthetic to be preferred is nitrous oxide and oxygen, unless specially contraindicated. I am not an advocate of local anesthesia, and while open to conviction on the matter, I do not think I can be convinced of its usefulness (without previous inhalation anesthesia), except perhaps in the very profoundly thyrotoxic patient. Crotti has put the matter in a nutshell in stating that no matter what the anesthetic the secret of success "lies in the careful

---

*Read before the South Branch of the Philadelphia County Medical Society, March 26, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

gradation of the surgical traumatism," and "the careful selection of the psychological time for the surgical venture." This careful gradation of the surgical trauma demands not only an exact and intimate knowledge of the local anatomy, but the application of the wisdom and judgment that come only with knowledge gained by experience, as to the suitable procedure in each case.

Preliminary upper pole ligation occasionally proves of such benefit as to obviate further surgery. Ligation of the upper poles is to be preferred because the nerves, vessels and lymphatics can all be included in one ligature, and with the upper pole as a guide one can be more sure of ligating the proper vessels than when ligating the lower pole. The best point for other than upper ligation is where the artery comes off from the external carotid artery. Preliminary ligation also serves as a surgical therapeutic test, since patients who show improvement during two or three months after a preliminary ligation will also probably benefit by subsequent more extensive surgery which, according to the exigencies of the case, consists of resection of a part or excision of an entire lobe. The primary operation, also by the improvement it engenders, renders the secondary step more safe. Some cases may require interval operations—first, ligation of one vessel, followed later by a second ligation and later by resection, and finally complete excision of a lobe. In either resection or excision it may be the part of better judgment not to close the wound at the time of operation, but simply pack it with sterile gauze, always, however, keeping in mind the margin of safety. Two or three days later the gauze may be removed and the wound closed.

Among the serious postoperative phenomena is acute hyperthyroidism with hyperpyrexia and consequent increased metabolism. These cases have been compared to sunstroke and treatment on similar lines advised. Crile has obtained splendid results by the use of ice packs and the electric fan which he finds act "almost specifically in controlling the destroying metabolism." In less severe cases, where the patients are restless and difficult to manage, opium should be given. Drugs like bromides and hyoscine, while permissible, are not dependable.

In closing these cursory remarks on hyperthyroidism I may be permitted to refer to my introductory words that there are few diseases that so easily fall into the medicosurgical class. There is without doubt a justifiable difference as to when medical measures should give way to surgery. In a large class of cases the patients improve and are cured by rest, medication, x ray, and other measures, but the difficulty that confronts the profession is the inability to tell which patients will and which will not improve without surgical measures and how long to wait before deciding that medical means have failed. If the injunction to the internist is, do not wait too long, the injunction to the surgeon should be, do not rush operation, and unless properly equipped with the physical facilities and surgical acumen and skill, hand your cases over to those who by their intense study of the question and by their aptitude have placed thyroid surgery among the safe operative procedures.

1634 Walnut Street.

EXOPHTHALMIC GOITRE AND SURGERY.

By Israel Bram, M. D.,
Philadelphia,
Instructor in Clinical Medicine, Jefferson Medical College

The treatment of exophthalmic goitre or hyperthyroidism, since its description, by Graves, von Basedow, Parry, Marie, and others, even within recent times, has been a question the answer to which is as varied and inconclusive as to any of the other of the most obscure problems in medicine. The indecision of opinion regarding the therapeutics of this disease is greatest in those who are equally disposed to both branches of the science of medicine, i. e., surgical and nonsurgical theory and practice; the representative of this class of physicians is the busy general practitioner whose openmindedness, though a virture in the abstract, is often a fault because of the tendency to yield with favor in the direction of brilliant immediate results at the expense of ultimate good. Conversely, the opinion regarding this matter gradually but surely assumes decisive, concrete deductions based upon premises more or less valid the farther away from general practice the work of the doctor finds itself; this class is represented by the surgeon on the one hand and the internist on the other. It is the validity of the premises forming the basis of conclusions that governs the situation, and it is with this not only as the starting point but as the fundament itself of the entire question, that we are here concerned.

The importance of this problem cannot be overestimated. It is only necessary to recall, in the light of recent developments, that Graves's disease is rapidly becoming more prevalent from year to year, to convince us that this question is among the few of the great ones with which we have to deal in modern medicine. Diagnostic and laboratory technic of today reveals the presence of thousands of incipient cases which formerly were not recognized and, therefore, wrongly diagnosed, with dire results. The high tensioned mode of existence, accompanied as it is by the rush to earn the dollar, and often the greater rush to spend it, long waking hours and diminished sleep, the frenzy for exciting forms of avocation and of recreation—all these, in lowering bodily resistance and diminishing somatic stolidity, reduce the threshold of nervous reaction, which is the strongest predisposing cause to the syndrome of Graves's disease. Finally, and this by no means exhausts the examples of predisposing factors which could be cited, the great world war has brought to light that war conditions are not only the most fertile in the production of exophthalmic goitre, but the term shell shock (1) (which, by the way, is quite as much an excuse for ignorance as the term idiopathic) has been applied to sufferers from various primarily obscure conditions of which approximately sixty-five per cent. of cases sooner or later developed all the earmarks of exophthalmic goitre.

The surgeon and the internist have been waging a goodnatured war over the management of this disease, each stating that it belongs to his own field of endeavor. In order to go into this argument with due fairness to both, let us first see what points both factions agree upon: 1. Though most recent developments by Janney and others seem to point to exophthalmic goitre as a dysthyroidism, the majority of surgeons and internists believe the disease to be due to a hyperthyroidism, i. e., an overactivity of the thyroid gland, followed by a surcharging of the blood with thyroid substance, which, in turn, is responsible for practically all the signs and symptoms of the disease. 2. The surgeon and internist agree that a curtailment of the activity of the thyroid gland to the normal point is "the consummation devoutly to be wished." 3. The surgeon and internist agree that thyroidectomy often results in an immediate improvement. 4. Both must of necessity agree that thyroidectomy is not only associated with a considerable mortality rate, but that its feasibility is too often called into question in view of the fact that the improvement achieved in most patients who survive operation is incomplete and shortlived.

Now, upon what premises does the surgeon base his views in favor of surgery in the treatment of Graves's disease? They are: 1. Removal of part of the thyroid is the most direct method of procedure in an effort to restrict the quantity of thyroid substance manufactured by the organ. 2. Statistics. 3. Surgical principles.

Removal of a portion of the thyroid at first thought seems the most logical thing to do if we were to accept without reservation the theory that the disease is due to hyperthyroidism. Unfortunately, however, this etiological theory not only seems untenable in most cases, but practical results also rudely shake this view from its very foundation. Although it was formerly taught that the administration of thyroid extract in sufficient doses is capable of causing the syndrome of the disease, we now know that in most instances only a few of the symptoms are produced in this way, but rarely, if ever, the classical picture of Graves's disease. Moreover, removal of part of the hyperplastic thyroid in a subject with exophthalmic goitre seems to result in an overwhelming compensatory hyperactivity of the remaining portion of the thyroid sooner or later; this is proved clinically by the numerous recurrences observed, and has been shown to occur pathologically in patients dying of the disease, who had submitted to a thyroidectomy some time before. Most conclusive is the almost unanimous opinion of endocrinologists throughout the world, that though the disease asserts itself chiefly as a thyrotoxemia because of thyroid hyperactivity, the direct pathogenesis is of pluriglandular nature, the thyroid hyperactivity occurring merely as a link in the chain of pathological physiological events in which the thymus, suprarenals, pituitary, parathyroids, pancreas, and gonads play no small part. The inconsistency of attacking the thyroid gland with a view to cure is, therefore, apparent.

The surgeon places great reliance upon statistics (2), and the greater the number of thyroidectomies performed in a given clinic the greater the amount of pride exhibited in statistical figures. But without any intention of doubting the veracity and sincerity of our good friends, the surgeons (through whose art thousands are daily saved to the land of the living), their statistics in thyroid surgery are as deluding to them as to the world at large. It has been said that there are two sources of error in this world—lies and statistics—and though a statistician may partake of angelic qualities with regard to accuracy of statement, yet his figures may be misleading, simply because of the existence of an erroneous refracting medium over which he has no control. In order to be convinced that the mortality of thyroidectomy is greater than the statistical three, four, or five per cent., it is only necessary to spend a year or two in a large general hospital as intern, where the observer will soon learn that the mortality of thyroid surgery is at least as great as that attached to the most serious of major operations. Though this may seem a vague generalization, my interest in this subject is the cause of constant inquiry into this phase of the matter, and the result has been a gradually diminished faith in the accuracy of surgical mortality statistics of this disease. When an intern states that "we had a ligation today, as a preliminary to thyroidectomy, but the patient died," or "we had two lobectomies yesterday; one is doing pretty well, but the other died last night," or if you constantly learn such facts which are more realistic than statistics, and especially if many of your own patients who are recovering from Graves's disease under nonsurgical management narrate similar histories of patients similarly affected, whom they have known, and who have died through surgical interference, then it is time to attach a neatly painted placard on each patient suffering from this affection, on which might be inscribed "Surgeon, touch me not."

In addition to the mortality rate, statistical figures in the surgical management of exophthalmic goitre include a consideration of clinical results. Here again we find much to comment upon. A survey of statistical sheets from various institutions reveals an interesting fact, namely, the use of terms vague in their implications. The columns of figures of percentages in each instance are embellished by such indefinite terms as "slightly improved," "markedly improved," and "cured." No mention is made of patients whose condition is aggravated through the operative procedure—a common cause of postoperative death; in other words, there is no consideration of acute exacerbations with fatal termination, hours, days or weeks after operative procedure. These fatalities are not included in the mortality rate. By rights they should be. The percentage of unimproved cases requires no comment, except that this probably includes patients made worse by the operation. With regard to slightly improved and markedly improved cases, it might be said that not only are these terms extremely elastic, depending upon the personal equation of both patient and surgeon, but their very vagueness stamps them as illogical concepts. What is the dividing line between unimproved and slightly improved? Between slightly improved and markedly improved? Is it the eyes? The heart? The nervous system? The goitre? The body weight? The eyes, even in the presence elsewhere of marked temporary improvement following thyroidectomy, rarely, if ever, improve to a perceptible degree. While the internist must admit that removal of a considerable portion of the hyperplastic thyroid in many instances reduces the thyroid toxemia, resulting in improvement with regard to the heart rate, the nervous system, and the body weight, this amelioration of varying degree occurs less often than statistics indicate and is short lived, its duration depending upon the rapidity of the process of overwhelming compensatory hyperplasia of the remaining portion of the thyroid gland, which clinicians and pathologists sooner or later observe to occur. Thus the patient, though happily improved, say to the extent of approximately fifty per cent., with a corresponding return of usefulness to self and society, in course of time (usually within several months), experiences a gradual return, subjectively and objectively, of the syndrome for which operation was performed, and the doctor is again consulted. How often do we find this patient the subject of repeated surgical procedures! Again, how often do we find this individual, after having visited innumerable doctors' offices and clinics, disgusted with the medical profession and resigned perforce to the inexorable course of the disease? And again, having made a good operative recovery, how often is the patient in course of time a victim of the consequences of the removal of too much thyroid, damage to or removal of the parathyroid substance, and other surgical misfortunes!

That surgery (in spite of itself) does not lay claim to startling or rational results in the therapeusis of Graves's disease is emphasized by the following: 1. The numerous volumes published in recent years on the thyroid gland are scarcely, if at all, concerned with a display of the *rationale* of treatment or with conclusive reports of permanently cured cases, but deal essentially with the *modus operandi* of *surgical attack* and are often replete with beautifully illustrated diagrams detailing the various steps in the operations proposed. 2. The numerous papers on thyroid surgery read and published, present the same characteristics. 3. Uncertainty on the part of many thyroid surgeons regarding what plan of procedure to adopt, and their indecision regarding the efficacy of surgical interference in this affection is expressed by word and pen. 4. The main argument presented by enthusiastic surgeons, in which they ask "Why remove diseased tonsils or a diseased appendix and hesitate to attack a diseased thyroid?" is fallacious. Now let us examine these *seriatim:*

Without mentioning authors of most excellent volumes and articles (i. e., surgically excellent), on affections of the thyroid gland, I would state that in their own field these publications are not only well written but almost perfect. By the term own field, I mean affections of the thyroid gland which are of strictly surgical nature or conditions manifestly not genuine Graves's disease. Thyroid adenomata, cystic goitre, malignancy, thyroiditis, and other nonhyperplastic thyroid affections, are undeniably surgical entities, and should be dealt with in accordance with surgical principles. But for many reasons, some of which are herein contained, a true condition of hyperplastic goitre or Graves's disease should not be discussed by these gentlemen as belonging within their domain, unless it be for diagnosis. The dire operative and postoperative results of surgical interference in this disease, as well as the questionable premises upon which operation is based, coupled with the lack of conclusive proof of absolute surgical cure, has led many open minded surgeons to doubt the efficiency of surgical procedures in this disease. Often we find able surgeons giving vent to expressions such as this: "It is my own belief that the present status of surgical therapy is but a stepping stone to the development of some method of arresting the toxic functional disturbances of the gland, and that eventually other measures, perhaps nonoperative, will be forthcoming, that will deal with the cause rather than the effect of deranged function and, by removing the cause, break the vicious circle." Again, "Reviewing the whole subject of the operative treatment of exophthalmic goitre, it seems to me that it may reasonably be doubted whether surgical treatment is not on the whole worse than useless" (3). Once more: "It is . . . impossible at present to give surgical treatment the preference over medical means" (4). And here is a statement by the father of thyroid surgery: "The opinion of an eminent surgeon that ninety per cent. of all goitres can be so improved by medical treatment as to make operation unnecessary, was probably based upon observation of the effect of rest, for rest is the common element in all the various forms of treatment that have proved successful. (That opinion, by the way, is Kocher's, endorsed by Charles H. Mayo.)" (5). And, finally: "The present low mortality of thyroid surgery in very competent hands has been obtained at the cost of many unfortunate victims as a rule" (6). Utterances such as these could be cited *ad infinitum,* but it would unduly prolong this paper to give further opinions of authorities on the subject.

A hasty survey of types of operation advocated by surgery at different times further confirms the unsettled opinion regarding the advisability of the knife, and the frequent adoption of some new operation in treatment is a tacit implication or admission of the failure or impotency of operations previously employed. The old fashioned complete thyroidectomy invariably resulting in cachexia strumipriva, was soon regarded as unnecessarily radical and gave way to thyroidectomy of one lobe as the operation of choice. Because of rapid recurrences, thyroidectomy of both lobes became popular. For many reasons this operation soon fell into disfavor, and surgeons began to seek milder methods of treatment. Ligation of one carotid artery and in some instances bilateral ligation for the purpose of partially interrupting the blood supply to the thyroid and thus diminishing its functional activity, was for a time looked upon with favor by prominent surgeons. But after a brief period of popularity this procedure was found to be devoid of demonstrable relief, because the blood supply of the thyroid gland was sooner or later more than compensated for by the collateral circulation. This led to the adoption of the ligation of the vesesls of one or both sides, followed some time later by thyroidectomy. The number of operations on a given patient occasioned a corresponding increase in mortality rate. During all this time occasional reports were forthcoming from different parts of the world regarding the wonderful results obtained from sympathectomy or resection of the sympathetic nerve, the Jaboulay or Jonnesco operation. This procedure, however, soon fell into disrepute, and another, that of thymectomy with or without thyroidectomy, superseded it. The latter operation, though still occasionally practised by exceptionally bold surgeons, entails a very high mortality rate, and as soon as its futility as a rational cure of Graves's disease was demonstrated, has practically been discarded. Finally, we might remark that at the present time the mainstay of surgery is unilateral or bilateral ligation, thyroidectomy of a varying quantity of the gland, or both. How evident it is, then, that surgeons, even the very boldest of them, are at sea regarding what method of procedure to adopt; and as a corollary, how obvious it is that their own knowledge is lacking in lucidity!

This argument is often employed by surgeons in justification of thyroidectomy: "Why operate on a diseased appendix or tonsils and hesitate to operate on a hyperactive thyroid gland?" The analogy is obviously erroneous if we but believe that, 1, appendicitis and tonsillitis are local conditions, while Graves's disease has a widespread etiology, symptomatology, and physiological relationship; 2, the appendix and tonsils are not essential to life, while the thyroid is a vital organ and as such must not be tampered with; 3, the appendix in appendicitis and the tonsils in chronic hypertrophic tonsillitis are the seat of germ activity, while the hyperplastic thyroid is merely hyperactive, not infected; 4, complete removal of a diseased appendix or of offending tonsils results in improved health, while total thyroidectomy kills the patient, and a partial operation does not cure the patient, to say the least. But I hear a disapproving surgeon remark: "But surgery does cure in many instances, for I have myself seen a number of such cases." Quite true. We have all seen cases of permanent cure by thyroid surgery of what appeared to be instances of Graves's disease, but which in reality were not such cases. The writer, in unison with others who devote most of their time to this subject, has never seen a permanent surgical cure of genuine Graves's disease. For example, McCarrison (7), a pioneer in the thyroid field, states: ". . . the practice of operative interference with the thyroid gland in all cases of Graves's disease at sight is a common custom at present, and without applying all the resources of our art in the detection of its cause, is one that cannot be too strongly deprecated. I am convinced that the number of cases in which thyroidectomy is performed will become smaller and smaller, and its practice . . . will ultimately be abandoned." What, then, are those cases apparently cured by surgery? Let us enumerate:

1. Careful, openminded surgeons, when confronted with a case of Graves's disease, subject the patient to prolonged preoperative and postoperative nonsurgical treatment. A patient of this sort, having recovered from the immediate surgical shock, may, in the absence of surgical accidents, make a complete clinical recovery. Here it is evident that the credit reverts not to surgical but to nonsurgical management of the disease, which latter alone, if carefully applied, is capable of curing Graves's disease. This opinion is confirmed, in part at least, by surgeons themselves, who agree that without a carefully outlined postoperative treatment of indefinite duration the surgical procedure is a flat failure.

2. Occasionally a subject of Graves's disease is completely and permanently cured by surgery, but not by the usual surgical operation. The surgeon who is at the same time an endocrinologist and a diagnostician will, by painstaking efforts, seek to discover and frequently find that the exciting factor in the production of the syndrome and its various vicious circles is infected tonsils, a uterine neoplasm, a chronic appendicitis, or the like, the removal of which spells cure. Sir Arbuthnot Lane (8), for instance, reports a case in a young girl completely cured by the removal of an offending portion of the large intestine. The internist cannot but concur with the opinion of clinicians of such scientific stamina, for these make sure of their grounds before proceeding. Such are undeniably genuine instances of surgical cure of Graves's disease, but the thyroid gland and its environs are undisturbed.

3. Graves's disease naturally tends toward spontaneous cure. It is well known that a small percentage of cases tend toward spontaneous recovery, treatment or no treatment. A patient of this sort, in recovering after a thyroidectomy, has Nature to thank and not surgery. It must be borne in mind, however, that these instances are so rare that it is safest to deem spontaneous recovery a negligible element in the course and prognosis of Graves's disease.

4. The Basedowified type of goitre, i. e., those instances in which, superimposed upon a long standing simple or nontoxic goitre, there occurs a kind of Basedowian syndrome, should not be regarded as Graves's disease, for the removal of the old goitre will cause the syndrome to disappear and will cure the patient. This class of patients is the largest source of statistical figures of socalled markedly improved and cured cases. These patients, in fact, should be treated along surgical lines, not, however, without a preoperative and a postoperative course of careful nonsurgical management in order to make surgery itself eminently successful. A case of this sort, however, is not one of genuine Graves's disease.

5. A patient suffering from simple or nontoxic goitre may, on coming into the presence of the surgeon for examination, present rapid heart, certain nervous manifestations, and even tremor, which symptoms, due to anticipation or fright, are hurriedly construed as constituting pathognomonic evidences of Graves's disease. Thyroidectomy is performed, and the patient is cured. This is a cure of nontoxic goitre, not of Graves's disease.

6. Goitres, simple or nontoxic, which by pressure of vessels and other structures within the neck and chest give rise to the socalled Kocher or Kraus goitre heart, present a syndrome which is often confused with that of Graves's disease. Removal of the goitre cures the patient. Again, this is not a cure of Graves's disease. It can be seen that these three types of cases (4, 5, and 6) are instances in which the diagnosis of the surgeon is called into question. We believe these cases to belong strictly to the realm of surgery.

7. Some cases of Graves's disease are apparently tending toward recovery, but in reality leading slowly but surely to a state of myxedema. These constitute the socalled burned out thyroids, in which the thyroid hyperactivity gradually gives way to hypoactivity because of tissue degeneration within the gland. The surgeon who operates in a case of

this sort during the stage of hyperactivity of the gland is placed in a peculiar predicament when some months after apparent cure in every demonstrable respect the patient is brought to him with a full fledged picture of myxedema. How can he prove to himself in order to still his conscience that he did not remove too much thyroid in this patient? In other words, he has no way of telling whether or not the patient is suffering from postoperative cachexia strumipriva. This, by the way, is another argument against thyroid interference in cases of undoubted Graves's disease.

We now arrive at another phase of the topic, and one which to my knowledge has not been discussed by previous authors on the subject, viz., the comparative clinical picture between an operated but unimproved case of Graves's disease, and one in which the thyroid gland has not been disturbed by surgery. Concisely stated, the differences presented should in themselves suffice to guard against surgery, and are as follows:

1. The course of the disease in a patient surviving the operation is usually rendered more chronic; the tissues of the body become more firmly settled into morbid physiological function. This affects especially the circulatory and nervous systems, and the structures entering into the production of the exophthalmos.

2. This confirmation of morbid tissue habit, asserting itself in hyperactivity and excessive catabolic changes, coupled with reduced recuperative powers in consequence of surgical shock, leads to greater degenerative changes than could be supposed of cases with more acute course (nonoperated cases), and consequently to a greater amount of permanently damaged or nonregenerative structures.

3. These changes often show a predilection for the central nervous system, as evidenced by the greater predominance of the psychoses in patients operated upon than in those not operated upon. In my experience, most instances of definite insanity of thyroidal etiology are derived from this category.

4. Because of the tendency to tissue degeneration and the diminished quantity of thyroid substance, the thyroid in operated cases, whether or not there had been a period of apparent improvement or apparent cure, is more likely to reach the condition known as burned out than that in nonoperated cases. Thus a subject of thyroidectomy may, within a few months, present evidences of both hyperthyroidism and hypothyroidism, changing sooner or later to the complete clinical picture of myxedema or cachexia strumipriva.

5. Obviously, the difficulties of the endocrinologist in the management of an operated case are at least twice as great as in a case not interfered with by surgery; in fact, the obstacles to complete restoration of health at times appear insurmountable. Although in an apparent state of harmful hyperfunction, the thyroid, a vital organ, is needed in its entirety as an ally in the proper nonsurgical management of the disease, and the keen internist seeks to quiet the frenzied turbulence of thyroid and other glandular functions by a therapeutic appeal or influence directed to the entire series of organs and structures responsible for the clinical symptom complex.

That Nature resents any mechanical interference with the thyroid in Graves's disease is therefore emphasized in the differences observed in the symptomatology and course between a nonoperated case of exophthalmic goitre and the average patient who had undergone one or more operations months or years before. As my work brings me into contact with both, an examination of the following operated cases taken at random from my files will serve to illustrate the points in question:

Case I.—On April 29, 1920, I was called to see Mrs. L. T., aged thirty-five years, at her home. She complained of marked weakness, extreme nervousness, gastrointestinal irritability, vertigo, insomnia, and distressing palpitation. She had felt so ill during the past few years that she rarely left her house during that time. The family history presented nothing important. Her previous medical history was devoid of important data, except that she had been suffering from socalled nervousness since childhood. Social history presented nothing bearing etiologically upon her condition. Married ten years ago; has one child eight years old, who had been suffering from an occasional attack of epilepsy from infancy up to two years ago, when, under the influence of a nonflesh dietary, these attacks ceased to occur. There had been no miscarriages. Menses were regular up to a few years before this time, when they began to occur at intervals of three weeks. With the exception of a great fondness for coffee, her dietary habits were irreproachable.

There was apparently nothing in her household environment conducive to physical or mental maladjustment. Her husband was devoted and indulgent within all reason, and, although she had the responsibility of domestic duties, her mother performed most of the household tasks. Her present illness seemed to have been predisposed by the previously mentioned state of nervousness. With the progress of time this became gradually worse until, in 1915, she had what she termed a nervous breakdown, from which, after several weeks, she partially recovered. Her chief difficulties at this time were extreme cardiac discomfort and palpitation, throbbing of the large vessels of the neck and limbs, a feeling of tremulousness in the muscles, anorexia, nausea, vomiting, diarrhea, hysterical outbursts, complete insomnia, a weakness so extreme that walking was almost impossible, and even a few moments' standing left her so breathless that she would fall back into an armchair exhausted. Interviews with several physicians led to a diagnosis of hyperthyroidism, and an operation was advised. After a period of deliberation, the patient finally consented to a thyroidectomy. This was performed by a prominent Philadelphia surgeon in February, 1917. Operative recovery was tedious, but within three months she was well enough to be sent home. Clinically, no change was effected in the patient's condition. Not only did all her complaints persist, but her heart seemed to throb more forcibly than ever before, and the weakness became more profound. She remained in this condition with practically no treatment until a few months before she was brought to my attention by her family physician.

Examination revealed a frail, white, small statured woman, weighing ninety-four and three fourths pounds, too weak to stand unsupported, and heaving a sigh after every few words uttered in response to questions. The neck presented a neat, semilunar scar at the site of thyroidectomy, and examination of the neck proved that there was not only an absence of goitre, but there seemed to be almost an absence of thyroid substance itself. On questioning the patient, I was informed that although there was at no time any evidence of thyroid swelling, operation was performed without regard to this fact. Eyes were entirely normal; no exophthalmos or other signs had been present at any time, according to the patient. The main signs and symptoms evident at this examination were extreme weakness with a degree of general muscular incoordination, dyspnea, a feeling of roaring in the head, restlessness, precordial discomfort, insomnia, and attacks of nausea, vomiting, and diarrhea. Dermographia was typical, heart regular and rhythmical, pulse 130 a minute, of poor volume and tension. In addition to a soft, systolic murmur of probable hemic origin audible at the base, there was moderate cardiac enlargement and a weakened muscular element of the heart sounds, especially discernible over the mitral and tricuspid areas. The tremor of the outstretched fingers and toes was typical of Graves's disease.

It was evident that we were dealing with a case of hyperthyroidism without goitre and without exophthalmos; that operation was performed irrespective of the absence of thyroid swelling. The patient was convinced that the surgical procedure was not only futile, but that it aggravated her symptoms, especially the weakness, poor weight, and precordial discomfort.

Dietetic, hygienic, medicinal, electrotherapeutic, and psychotherapeutic treatment were instituted at once, the patient calling at my office for treatment after the preliminary consultation. Through very satisfactory cooperation, the patient has at this writing gained twenty pounds in weight, feels stronger, sleeps well and arises refreshed in the morning, and feels better than she has felt for many years. Had this patient been so managed without operation, the author believes that results would have been even more satisfactory, judging from comparison with progress in a large series of cured nonoperative cases. In this case, however, although subjectively, the patient is well on the road to recovery, the heart rate is still 100, and the tremor is still evident. We expect to effect complete subjective cure, but feel that the duration of active treatment will be at least twice that of an average case of Graves's disease not previously operated upon. The heart action, because of probable myocardial degeneration, may never become quite normal from an objective viewpoint.

Case II.—On November 22, 1919, I saw Mrs. M. C. B., a frail, nervous, white woman, thirty-five years of age, medium stature, presenting marked exophthalmos, with two scars on the neck, and suffering especially from the obsession that she was unable to leave her house, not even to take a short walk, and therefore entirely incapable of coming to my office for examination, although she moved about her house in an almost normal fashion. She would not even venture out in her husband's automobile, so firmly rooted was this notion of physical infirmity. For this reason, it was necessary for me to see her at her home, where I explained to her that within two weeks she would be sufficiently improved to be able to come to my office for treatment. I also informed her that at that time she would be obliged to leave her house for treatment or I would give up her case. Having apparently convinced her that her dread of outdoors was nothing more than a mere obsession, and that it was necessary to overcome this at the very beginning if we would be successful in treatment, she agreed to do as I directed and promised that within two weeks she would not only leave the house for treatment but would also take a slow walk daily in the open. Her chief complaints were of weakness, dyspnea on slightest exertion, indigestion, palpitation, nervousness, hyperidrosis, and insomnia. Family history was practically negative. She had never been ill until fourteen years before, when she says she became very nervous. Was married ten years ago and has two apparently healthy children. Menstrual history uneventful; no miscarriages. Dietary habits poor; she was very fond of meats, highly spiced foods, tea, coffee, pastry and confections, indulging in all these without limit. Present illness began fourteen years before, shortly after witnessing a trolley accident. Gradually she became morose, melancholy, sleep was restless, weakness progressed, and her weight diminished.

After a year or two of treatment she improved somewhat and so remained until ten years ago, when she married. Her domestic happiness was brief, as her husband, impetuous and impatient, was not tolerant enough to fall in with her constant moodiness and petty whims. This was soon interpreted by her as an evidence of marital infidelity, and served as the starting point of an acute exacerbation of her condition. She was soon in a state of active Graves's disease, as the symptoms described were swelling of the neck, bulging eyes, palpitation, precordial distress, and a sensation described as trembling all over (tremor). Although the appetite was fair, there was a very rapid loss of weight; diarrhea, hyperidrosis, and insomnia were additional factors which conspired to weaken the patient to such an extent that, within several months, she was hardly able to leave her bed. In course of time her medical advisors suggested a ligation. This was soon done, as evidenced by a scar over the location of the right carotid artery. As this did not improve her condition, thyroidectomy was performed six months later (June, 1914). The operation almost resulted fatally. She hovered between life and death for a week, after which time she rallied, and within three weeks made a good operative recovery. A year of apparent slight improvement was followed by an increased swelling of the neck and a return of palpitation and all the other symptoms for the relief of which operation was performed. Although able to get about in her home, she was compelled to sit or lie down from time to time, as the heart would begin to thump, as she said, and there would be distressing shortness of breath.

On physical examination, the patient was seen to be a frail, undernourished woman weighing approximately one hundred and five pounds. Exophthalmos was so marked that the ocular conjunctiva was congested, and the patient experienced a constant sense of aching and burning of the eyeballs. Stellwag's, Moebius's, and Von Graefe's signs were present. The neck presented a scar on the right, over the site of ligation, and another semilunar scar of the customary lobectomy. On inspection and palpation it was clear that, although the right lobe of the thyroid was absent, the isthmus and left lobe were swollen to four times their size, so that a medium size goitre (lacking the right lobe) was present, which throbbed synchronously with the large vessels of the neck. On auscultation over the goitre, a loud, breezy, systolic murmur was heard.

The heart examination presented interesting data, due to a thyrotoxemia and heart hurry of over ten years' duration. The entire precordium, and to a lesser extent the entire chest, vibrated with each cardiac cycle. Here was a heart which, beating at the rate of one hundred and ten a minute, was slowly but surely undergoing degenerative changes, as evidenced, on inspection, by the markedly diffused apex beat, extending from beyond the right border of the sternum over into the left axillary space; on palpation, by the thrill and by the rise and fall of the palpating hand with each systole and diastole; on percussion, by the extension of cardiac dullness to the left anterior axillary line; and on auscultation, by a weakening of the muscular element of all the heart sounds, and a beginning soft systolic murmur over the apex, indicating a state of relative mitral regurgitation and bespeaking a predominance of the process of dilatation over that of hypertrophy.

It was evident that, were this process to continue for another year or two, a fatal termination by failure of compensation was more than likely. Respiratory expansion was two inches, but examination of the lungs gave a practically negative result. Skin was soft, thin, and moist, and dermographia was easily obtainable. The tremor of the outstretched fingers and toes was more intense and somewhat coarser than is usually seen in this disease, and the reflexes were markedly accentuated. Mentally, this patient appeared continuously on the *qui vive*—alert and keen for questions regarding her course and prognosis, and she was far from ignorant in matters pertaining to her physical signs. She was incapable of sustained attention, however, and would break off one trend of thought to begin another at a rate which made it necessary for me to check her in order to get a smooth history.

Aside from this mental overalertness, the patient seemed fairly rational, and even her apparent rambling was not at all inconsistent with the statements offered and the questions asked. In one respect, however, the patient seemed irreconcilable—the matter of going out of doors. "I simply could not appear on the street, because I am afraid the neighbors will talk about me." When informed that the neighbors had problems of their own to occupy their minds, she responded: "But I will attract so much attention when going on the trolley car." And when it was suggested to her that her husband could take her out in the automobile, she remarked: "But I am afraid of automobiles, and they tire me; anyway, my husband doesn't treat me right, and I won't go out with him." But when a persuasive though firm argument was presented, showing her fears of the outside world to be fallacious and a mere obsession, and that all she needed to do was to make the effort to put aside all possible objections and go out. After that, I promised, all would be well, and, moreover, that I would refuse to treat her at her home after the first two weeks. She seemed to yield, and promised that, beginning with the third week of treatment, she would ask her husband to take her in his car to my office for further observation.

Accordingly, dietetic, hygienic, medicinal and other necessary measures were outlined for the patient, and I left her, to return a week later. The patient had improved in every respect. Palpitation was hardly noticeable; sleep was somewhat restful; digestion was better and the capacity for food greater, and she thought she had gained somewhat in weight. Further treatment was outlined, and I called the following week, at which time she smiled—the first smile I had seen on this patient—and, as she informed me, it was the first in years. She ventured to remark that a sister she had not seen in two months had called on her just before I came in, and complimented her on the marked improvement in her appearance, not knowing that she was under treatment. The heart rate had been reduced to ninety a minute, and the systolic apical murmur was hardly audible; there was a slight filling out of the hollows of her cheeks (she could not be weighed because of her confinement indoors); her appetite had become very good, sleep almost normal, hyperidrosis hardly noticeable, and there was a sense of wellbeing that so encouraged the patient that she was convinced she would get well and asked how long I thought she would be obliged to remain under active treatment. I told her that this depended on obedience to orders, and, especially in her case, with respect to going out of doors; and that treatment at my office was essential to satisfactory progress.

She promised to call the following week in accordance with the original stipulations, on the condition that she would not be obliged to sit among other patients in the waiting room. I suggested that I would inform my office assistant to usher her into my library in the rear of the office, and that she would receive attention immediately after her arrival. This seemed to satisfy her, and I left her with that understanding. Exactly a week later, one hour prior to the time of her appointment at my office, she 'phoned, informing me that her husband was ill and unable to drive the car, asking me to see her at her home once more. I did so, found that she was further improved, and left again with the understanding that she was to call at the office the following week. As I anticipated, the following week she 'phoned again, complaining of toothache as an excuse for staying indoors. I saw her at her home once more. After the necessary professional attention, I informed her that I saw no patients outside my office unless they were bedridden, and, therefore, I would not see her again unless she saw fit to overcome this obsession. She promised to call the following week without fail. When that time arrived, she again 'phoned, informing me that she saw no reason why I could not continue calling on her, instead of compelling her to leave her house to be the object of curiosity of neighbors, and that she did not care to go out of doors anyway—the exact argument which was originally presented four weeks before. I talked to her for fully twenty minutes on the telephone, in an effort to persuade her to see her mistake, pointing out that her very life depended on the elimination of this foolish idea. She admitted that she was in the wrong, began with her premises once more, and argued in a circle. My time being limited, I decided to give up the task for more useful work. Finding that I was about to terminate the discussion, she began upbraiding me for being too hasty. I uttered a pleasant goodbye, and have not heard from her since.

The points to be emphasized in this case are: 1, the fact that the operation, as usual, was futile, serving merely to extend the duration of the illness to more than double the average time; 2, the increased chronicity observed had led to evident degenerative changes in the vascular system; 3, the mental attitude, especially the obsession, was probably due to similar degenerative processes in the psychical area of the cerebral cortex; 4, the remarkable response of the body (if not of the mind) to a properly planned régime of nonsurgical treatment which, if persisted in for a year or more, would doubtless have resulted in as complete a restoration of the patient as would be consistent with pathological events already existent.

(*To be concluded.*)

ROENTGEN RAY THERAPY IN HYPERTHYROIDISM.*

By Walter C. Barker, M. D.,
Philadelphia.

It is necessary to distinguish between goitre and hyperthyroidism as either condition may be present without the other, and the x ray is never used to treat goitre unless hyperthyroidism is present. Goitre is a general term meaning enlargement of the thyroid gland, while hyperthyroidism refers to an increase in the activity of the gland, which results in definite symptoms which are toxic in nature. There is, however, a relation between goitre and hyperthyroidism, and this was known to the ancients, for the Romans would not buy slaves who had enlarged thyroids or protruding eyeballs, because they were not capable of hard work.

The direct action of the röntgen irradiation into the thyroid is first to inhibit the function of the secretory glands. If the rays are continued beyond this point, there will be an atrophy of the other cellular elements of the gland; and if they are still continued, it is possible to cause a complete destruction of the cells and the production of a slough. It is because the secreting cells are affected before harm is done to the other cells that the röntgen ray is of value in the treatment of hyperthyroidism.

Before thinking of this modality as a therapeutic agent, the cause of hyperthyroidism should be considered. There is a great diversity of opinion among investigators as to the cause of hyperthyroidism, and each different opinion has clinical evidence for its support. The last word about the function of the gland has not been said. Cannon called attention to the fact, in describing experiments made by Dr. R. H. Levy, at the Harvard laboratories, that the function of the thyroid is stimulated by the sympathetic nervous system through the cervical ganglia.

Gauthier and others have shown the relation between the ovarian secretion and that of the thyroid; Goetsch the relation between the adrenals and the thyroid function; and Klose and Crotti believe that in all cases of severe hyperthyroidism a hyperplasia of the thymus is also present. It is known that the whole endocrine system is interrelated through the sympathetic nervous system and that the secretion from one gland or set of glands may either inhibit or stimulate the action of another gland or set of glands. Likewise, it is asserted by Sidney Pern and Arbuthnot Lane that toxemias, either from general or local infections, may have a marked effect upon the action of the thyroid. There are those who believe that a lack of the thyroid activity permits toxic material to pass through this gland into the general circulation and give rise to the symptoms of hyperthyroidism. This may appear so in a few cases, but in the majority of patients the therapeutic measures which inhibit the action of the gland also relieve the symptoms. It is because of this fact that the röntgen ray is of value in the treatment of hyperthyroidism.

The importance of the function of this gland cannot be overestimated. Mayo has stated that all the blood in the body passes through the thyroid every hour. It has the important function of cell metabolism and when hyperthyroidism is present the normal index of basal metabolism is greatly increased. Therefore it must be remembered that the normal balance in the function of this gland is necessary for a perfect state of health, and whatever form of treatment is used the object must be to reestablish this normal balance, because to lessen the activity of the thyroid so that its output will be less than the requirements of the body would produce the symptom complex of hyperthyroidism.

Before suggesting the röntgen ray as a means to inhibit the thyroid function, the contraindications to its use should be considered. It must never be used to reduce the size of the gland, because the ray will stop the secretion of the normal gland, as well as the pathological one, and as the thyroid secretion is important to health, the result would be injurious. If the body needs a greater supply of the thyroid hormone, the gland will often hypertrophy to produce it. This is a physiological enlargement, and no attempt should be made to reduce it. If in the course of this hypertrophy, or for any reason colloid substance is thrown out, and a simple goitre is formed, or there is adenomatous enlargement or any form of tumor, the röntgen ray should not be used, because it acts first upon the secreting cell and will cause hyperthyroidism before reducing the tumor.

We are often called upon to do something with the gland for cosmetic effects, for pressure symptoms as in the case of the annular variety and intrathoracic thyroid, for cystic degeneration and for malignancy. In such cases, surgery is to be preferred to any other form of treatment. In the less severe types of hyperthyroidism occurring in young people, and in the temporary forms following acute infections, medical treatment without the röntgen ray is to be favored. In very acute cases when the patient is prostrated to the verge of collapse it is better to postpone röntgen therapy until after a period of rest, diet and medical treatment. Immediately after the röntgen irradiation, it is possible that there is first a stimulation of the thyroid function, and in extreme cases this may prove fatal to the patient.

---

*Read before the Northern Medical Association, Philadelphia.

It is not necessary that all the cardinal symptoms of the complex known as hyperthyroidism be present before using the röntgen ray. One of the most profoundly toxic cases which came for treatment had neither enlargement of the thyroid nor exophthalmos. This was an acute case. The pulse rate was 160 to the minute and there was a loss of weight of 103 pounds in a period of a few weeks. The nervous symptoms and the prostration were pronounced. The diagnosis was established by elimination of tuberculosis, valvular heart disease and myocarditis. There was no mental shock nor demonstrable focal or general infection to account for the symptoms. In this class of patients, one diagnostic feature that is a very reliable guide, although not pathognomonic, is a marked degree of restlessness associated with tachycardia. This man, who was about thirty years old, could not remain still even for a few seconds, but would cross his legs, move his arms and snap his fingers. There were involuntary muscular twitchings of the neck and face. Later in the course of the disease, there developed a slight amount of exophthalmos and enlargement of the thyroid.

All cases do not respond quickly to röntgen ray therapy applied only into the thyroid. This is due to the effect produced upon the thyroid by an altered secretion in one or more of the other endocrine glands. In cases where the thyroid is not much enlarged and the nervous symptoms are very severe and there is a marked muscular asthenia and perhaps a lymphocytosis and some enlargement of the cervical lymph nodes, the region of the thymus gland should be irradiated as well as that of the thyroid. In those cases in which there are fibroid changes of the uterus, the irradiations should be given to the fibroid and ovarian regions. These will reduce the size of the tumor and it will be found that very little röntgen ray treatment will be necessary to the thyroid gland to relieve the symptoms of hyperthyroidism.

TECHNIC.

To determine the presence of intrathoracic thyroid or hyperplasia of the thymus, every case should be first examined by the fluoroscope. The thyroid casts a dense shadow but the thymus is sometimes only faintly outlined; and if its involvement is suspected, stereoscopic plates should be examined. If the thymus condition cannot be demonstrated and the Crotti's syndrone is present, it is better to include the thymus area in the irradiation.

Areas.—If a line be drawn with ink from the hyoid bone to the top of the third rib in the midline and this crossed with one at right angles at the top of the clavicals, there will be four areas. In order to prevent treating the same area more than once, they should be numbered 1, 2, 3, and 4. The areas so laid out will include the thyroid and thymus. If it is decided to treat only the thyroid, it may be done through the two upper areas, unless the isthmus is enlarged; in which case the thyroid region should be treated through three areas. In special cases, as will be shown by the fluoroscopic examination, it may be necessary to irradiate through other areas.

Tube.—As accuracy is essential to success, no other than the Coolidge tube should be considered.

Spark.—To get the proper penetration, not less than a nine and a half inch spark, measured between points, should be used, and a ten inch one is better. Too low voltage will stimulate rather than inhibit cell action.

Milliamperage. — The milliamperage must be determined by the resistance in the control of the apparatus.

Distance.—The distance of the anode from the skin may be that suited to the apparatus, but it must be constant. The distance of eight inches is generally convenient. The tube is centred in the holder, so that the centre of the anode is just five inches from the under surface of the filter. By an inside caliper set at three inches, the tube holder is lowered until the caliper just clears the under surface of the filter and the skin, making the total distance eight inches, which is always constant, because it is always measured.

Filter.—A filter of aluminum three millimetres in thickness is satisfactory for irradiations of the thyroid. There is so little gained in hardness of the rays above this thickness that it will not be worth the additional time required to give the dose.

Time.—The length of time for exposure varies with the amount of current, the spark back up, filter, and distance of the anode from the skin, but must not be more than will produce epilation, because if an erythema dose is given it will be followed by atrophy of the skin.

Dose.—The dose of the röntgen ray which I use is from a Coolidge tube, with five milliamperes of current passing through it for three minutes, the resistance being equal to a ten inch spark measured between points, and the röntgen rays filtered through three millimetres of aluminum. The anode is placed eight inches from the skin, the dose given through each area and the treatment repeated every four weeks.

Keeping in mind that the function of the thyroid is essential to health, it is important to know when to stop the röntgen ray irradiations. In the average case, the subjective symptoms are the first to be relieved. The patient begins to feel less nervous, has less palpitation, sleeps better, and is less irritable and has more ambition to work. The first of the objective symptoms to improve is the tachycardia, and this amelioration is the best guide in discontinuing the treatments. When the pulse is 160 or more, it may be reduced to 100 when the patient is at rest before reducing the amount of raying. In cases where the pulse rate is 100 to 120, it may be reduced to 80 or 90 before stopping the treatment. The safe method is to treat every four weeks until the patient feels better. After this, we may lengthen the intervals to six weeks and finally to eight weeks. If there is a return of the symptoms the interval may be shortened. In this way the thyroid output can be controlled without danger of producing hypothyroidism. The gland that is enlarged because of hypertrophy will reduce in size but not until the other symptoms have subsided; and the exophthalmos will become less noticeable, which is shown by the loss of the staring expression. The number of treatments required varies in different cases. Some patients begin to feel better after the second treatment, and are well in six months. However, it usually requires six to eight series at four week intervals, which are then lengthened to from eight to twelve weeks, and the patient kept under observation for about a year.

Conclusions.—Before using the röntgen ray as a therapeutic means, a röntgen examination should be made of the mediastinal region, to determine the presence of a submerged thyroid or hyperplasia of the thymus. Examination should be made to determine the cause of the hyperthyroidism, and when possible this should be remedied. Full doses of high penetrating röntgen ray should be used and the proper interval between treatments allowed, so as to note the effect before repeating the dose. Other endocrine glands should be irradiated when they are hyperactive.

Always keep in mind that the reduction of the size of the thyroid for cosmetic purposes, for the relief of pressure or for removal of tumors, whether benign or malignant, is a problem for the surgeon and should never be attempted by röntgen therapy; also that the use of the röntgen ray in the treatment of the thyroid is only to inhibit the cell action in hyperthyroidism. It will here take the place of surgery with results which are as good and without scar and the dangers attending an operation.

REFERENCES.

Wilson, L. B.: Experimental Lesions in Cervical Sympathetic Ganglia in Relation to Exophthalmic Goitre, *Am. J. Med. Sci.*, clv, 1918.

Plummer, W. S.: Function of the Thyroid, Normal and Abnormal, *Am. Phys.*, 1916, vol. xxxi.

Cannon, W. B.: Conditions Affecting Secretions of Thyroid Gland, *Am. Phys.*, 1916.

Kendall, E. C.: Thyroid Hormone, *Collected Papers of Mayo Clinics*, 1917, p. 335.

Quain's Anatomy, vol. i, p. 168, and vol ii, p. 710.

Mayo, C. H.: The Principles of Thyroid Surgery, *Journal A. M. A.*, vol. lxxi, No. 9, p. 710.

Johnson, Francis Hernaman: Use of Electricity in Exophthalmic Goitre and Other Diseases of the Ductless Glands, *Archives of Radiology and Electrotherapy*, August, 1918, London.

Sloan, E. P.: Heart Disease Due to Goitre, *Illinois Medical Journal*, March, 1918.

Barker, Lewellys F.: Nervous and Mental Symptoms in Exophthalmic Goitre, *Journal A. M. A.*, vol. lxxi, No. 5.

Cramer, W.: On the Thyroid Adrenal Apparatus and Its Function in the Heat Regulation of the Body, *Journal of Physiology*, Cambridge University, July 15, 1916.

Bram, Isadore: Nonsurgical Treatment of Exophthalmic Goitre, New York Medical Journal, 1915.

Cannon, W. B.: Some Relations Between the Emotions and the Glands of Internal Secretions, *Journal Lancet*, Minneapolis, 1916.

Pern, Sidney: *Thyroid Mechanism and Its Relation to Endemic and Thyrotoxic Goitre*, London, England.

Cole, W. A.: Exophthalmic Goitre, with Special Reference to Etiology and Röntgen Ray Treatment, *Journal of the Medical Association of Georgia*, January, 1918.

Crotti, André: *Thyroid and Thymus*, Lea & Febiger, Philadelphia, Pa.

Osler, William: *The Principles and Practice of Medicine.*

HYPERTHYROIDISM IN A CHILD.*

(*Report of Case.*)

By Morris H. Frantz, M. D.,
New York,
Instructor Neuropathology, New York Post-Graduate Medical School and Hospital; Assistant in Neurology, Neurological Institute.

Hyperthyroidism is a thyrotoxicosis. It has been known for centuries, for the ancient Romans recognized the fact that a slave suffering from hyperthyroidism was weak and feeble and incapacitated for arduous labor, but it was not until 1780 that Flajani noted that exophthalmos was a symptom of a disease. Perry in 1786 thought likewise, but Graves in 1835 and Von Basedow in 1843 described the condition of hyperthyroidism as we know it today. Crotti classifies hyperthyroidism into three groups: 1, infantile group, which takes in children up to ten years of age during the period the genital system is in its expectancy; 2, the juvenile age, which includes the ages of ten to fifteen, when the genital system is undergoing development; 3, adolescent, fifteen to twenty-five years, when the genital system has reached its maturity; 4, the adult, which includes the ages after twenty-five.

Crotti finds that the infantile group is comparatively rare, while the juvenile is more frequent. W. H. Lewis, quoting Mayo's statistics, found one case of infantile hyperthyroidism for three hundred in adults operated upon. The youngest patient was four years old when the case came under his observation and the disease had existed eighteen months. It is on account of this infrequent occurrence of the condition in children that I am presenting this case for consideration. It might not be amiss to review some of the theories as to the etiology of this condition.

Filelines, Walburton, Tedeschi, Dourdonfi and Bienfait, by sectioning the restiform bodies, got the symptoms of hyperthyroidism in the animal and therefore believed the condition had a bulbar origin. Charcot, Trousseau, and others of the French school as well as Gerhardt, Buscheau, Wickfield and Sattler of the German school considered it a neurosis of the entire vegetative nervous system. On the other hand, Nutkine and Blum thought it due to an insufficient depoisoning of the organism by the thyroid gland on account of fuctional insufficiency. Friedreich again thought it was due to an abnormal enlargement of the coronary arteries of the heart, thus giving an increased blood supply to the cardiac muscle and so causing an increased excitability of the nervous system. Gauthier considered the thyrotoxic syndrome as having a thyroid origin, while Mannheim thought it had a central origin. On the other hand, Basedow thought it was a poisoning of the blood by thyroid products, while Crile considers this to be a philogenic disease caused by disturbance of the entire motor mechanism — the thyroid gland being the activator.

Again Hart and Bircher consider a thymic origin, while Klose, Lampe, and Liesegang thought it was due to a dysthyroidism. Moebius thought it was due to a hypersecretion. This surplus of thyroid secretion poisons the organism. Crotti classifies the causes as follows: 1, thyrogenetic, 2, nervous, and, 3, polyglandular.

---

*Presented at a meeting of the New York Neurological Society, March 2, 1920.

The theory that is most widely accepted is that of Moebius, that is, a surplus of thyroid secretion. The pathology shows a hyperplasia. The symptomatology in the infantile group are irritability, nervousness and tachycardia. The patient is seldom conscious of palpitation, exophthalmos is rarely marked and the ocular symptoms are said to be usually absent. The tremors are present in moderate degree. An interesting feature is the *lack* of muscular asthenia, in contradistinction to the profound asthenia present in the adolescent or adult type. The vascular symptoms are present.

DIAGNOSIS.

Diagnosis rests on the tachycardia, nervous instability, ocular symptoms and goitre. Of late we have a very good diagnostic measure in the Goetsch test. It was established through serious experimental work by Goetsch of Johns Hopkins that in the clinical state of hyperthyroidism there is an increased constitutional sensitiveness to adrenaline. The test consists of injecting hypodermically adrenaline and observing that in a positive reaction there is an an early rise in the systolic pressure, a fall in the diastolic pressure (in mild reactions there may be a fall in diastolic pressure alone), there is also a rise in pulse rate. The rise in pressure may be from ten to fifteen mm. in thirty or thirty-five minutes. There is a moderate fall of pulse and blood pressure, then a characteristic secondary rise, then a secondary fall to normal in about an hour and a half. There is also an exaggeration of the clinical picture. He performed the test in three hundred cases and found that it held good in ninety-five per cent.

TREATMENT.

The treatment of hyperthyroidism consists of medicinal, surgical and mental therapy. Of the medicinal remedies, belladonna has proved most beneficial. Of the surgical, ligation of both superior poles of the thyroid gland is considered to be curative, but if the condition is quite advanced, a thyroidectomy may be necessary. Psychoanalysis and psychotherapy have their place in some cases.

CASE.—I. B., aged nine, German, school child. Came to the clinic of the third division of the Neurological Institute on March 28, 1919, with her mother; the child complained that she twitched her hand and moved her eyes to and fro and that it took two or three hours for her to get to sleep. She was restless and irritable at times and easily excited. Would fly into a rage at the least provocation. This had been going on for the past three and a half years and progressively been getting worse. Mother noticed that the child had palpitation of the heart for the past two years. She became tired easily, particularly when climbing stairs.

Family history. — The father living, aged forty-two, rheumatism; mother forty, hyperthyroid condition (to be described later). Paternal grandfather seventy, gastric carcinoma; paternal grandmother fifty-five, septic; maternal grandfather seventy-two, senility; maternal grandmother fifty-four, carcinoma.

The mother was well during the gestation. Full term child was fifty-three cm. long and weighed six and three quarters pounds. Nursed six weeks and had to be fed on proprietary milk on account of poor quality of the mother's milk; talked at nine months; teeth at a year; sat at six months; walked at a year. The mother observed for the first time that the child had some swelling in the neck at about the age of one and a half years, when her physician whom she had consulted about some other condition called her attention to it. The child had whooping cough at five and a half years; measles at six; scarlet fever at six and a half and otitis media following the scarlet fever; tonsillectomy at six and a half years.

Present condition. — Patient is a young female, well developed. She appears bright, well formed, good crop of hair. The eyes react to light and accommodation. There are present, signs of Stellwag, Moebius and Graef; exophthalmos is present. Tonsils not seen; tongue tremulous. Thyroid is visible and palpable. Tachycardia present; pulse 104; no murmur heard. Lungs negative. Epigastric, abdominal and knee jerks present. Station is good, gait normal; speech is good. There is no incoordination and no ataxia. Fine tremor of the hands. Patient attains a mental age of twelve years and two months on the Ternan scale—her actual age being nine years and six months at the time of examination.

The psychologist's report indicates superior intelligence, remarkable immediate memory, judgment and comprehension considerably beyond her years —in other words, she is mentally precocious. Report of the Jung association test shows that her associations are good. Nothing suggestive in the test except the unconscious beginning of sex.

Analysis of the blood shows four million red cells, 6,500 white cells, and hemoglobin 75. Two per cent. eosinophiles. Two per cent. large lymphocytes; 52 per cent. small lymphocytes, and 2 per cent. large mononuclear and 42 per cent. neutrophiles. Blood sugar 139 mg. per 100 c. c., or 139 per cent.

The mother had been advised to keep the girl away from school for a month, and she had been put on nerve sedatives together with tonic baths. Report showed that she became less nervous. Gained three pounds and medication was continued. On June 30th her pulse was 122 without cause for excitement. She was restless at night. September 5th her pulse was 102. Patient less nervous; had been in country for eight weeks.

October 28th.—Mother reported that she talked at night and that she got excited over her mother wishing to give her an enema, and in her excitement she threw her face upon the table and broke one of her upper central incisors, and then became hysterical and pulled her hair. It would be interesting to describe the condition of her mother:

Both parents have lived in Baden all their lives. A short distance from Baden (Virun) everyone had a goitre. The parents lived four to eight miles from Virun. The paternal aunt living in Baden had a goitre for the last five years.

The mother, E. B., aged thirty-nine, married, came to the clinic for treatment a month after the child, with the complaint that she had pains inside of her right and left ear, back of the neck, top of the head and temporal region. Her memory was poor at times. She felt depressed, tired, fagged out, and easily excited. She was irritable constantly. Had a sour taste in her mouth. Appetite poor—slept poorly; bowels constipated. This had been going on for the past three and a half years, and had progressively been getting worse. It began when she was crossing the Atlantic, and on account of the danger involved in the voyage at that time she could not sleep. Menses started at fourteen. She had typhoid fever twenty-four years ago. She had tuberculosis fifteen years ago. Was in a sanitarium in Germany for three months. The patient is the only child the mother has. No miscarriages. The patient is a female, well developed, ruddy complexion, station good, gait normal. Examination showed an exophthalmos and tachycardia; coarse tremor of the hands and tongue. The patient became flushed quite readily.

Blood examination showed four per cent. neutrophiles; 11 per cent. eosinophiles; 3 per cent. large lymphocytes; 46 per cent. small lymphocytes. Blood sugar 103 mgms. in 100 c. c. The mental test showed a normal mental age. Patient also had a retroversion of the uterus, and bad teeth. Had put her on tonic baths and nerve sedatives. The interesting feature of this case is that the mother lived in a district where goitre was prevalent. The child was born in that locality. That, after one and a half years or two years of age, a doctor told the mother that the child had a goitre and the child showed every evidence of hyperthyroidism as well as the mother.

CONCLUSIONS.

Hyperthyroidism with its symptom complex appearing in a child at the age of one and a half years, which may have existed even prior to that time.

Due to the residence of the parents of the child in a goitrous district, the mother of the patient suffering from hyperthyroidism, and the mental precocity of the patient, the question may occur as to whether this condition is congenital.

Thanks are due to Dr. Walter Timme, chief of the third division, for his kind permission to present this case from his service.

Seventh Avenue and Fifty-sixth Street.

GOITRE.

By Herbert L. Northrop, M. D., F. A. C. S.,
Philadelphia.

With its etiology uncertain, its pathology still imperfect, its nomenclature ill defined, and the internist, the röntgenologist and the surgeon all laying claim to its treatment, goitre presents to us several interesting problems. Nothing of proved value in the prophylaxis of goitre has been proposed so far by anybody, except to avoid dwelling in regions where goitre is endemic, or, as suggested by Kimball, Rogoff, and Marine (1), to administer two grams of sodium iodide twice yearly to young school girls. These gentlemen asserted that retardation of growth of the thyroid enlargement resulted, and a lessening in size. I regret to say that I believe these experiments prove little or nothing, and I fear that Rogoff's conclusion that simple goitre in man may be presented on a large scale is not substantiated. Therefore, today we know little or nothing more regarding the prevention of goitre than we knew a century ago.

Other peculiarities stand out more conspicuously than is the case with most organs. For instance, the thyroid gland may exert a baneful effect upon the metabolism of the body without having undergone any enlargement whatsoever, and this ensemble of pathological manifestations is called goitre, although by common consent that name is permitted to imply a visible hypertrophy of the thyroid. Again, an enormous goitrous tumor may be present but be absolutely without systemic effect. Here are suggested the two extremes of thyroid disease: the serious, toxic goitre, without any or only very moderate increase in the size of the gland, and the huge cystic goitre without toxic manifestations. The latter may be removed surgically with impunity; the former is almost forbidden fruit to the surgeon. It is in goitre, therefore, that extremes are found, but they do not meet. All of which is worthy of note, for probably no class of cases should be so carefully individualized and selected as this, when the question of surgical treatment arises.

Because of its protean features, or possibilities, the diagnosis of goitre and its treatment present a most fascinating field to the medical profession today. A friend of mine (but not a patient), Dr. H. H. G., was told that he had diabetes, and he believed it. His urine contained sugar and he failed in health seriously and rapidly. No one even suspected that he had a goitre, and he presented none of the usual clinical symptoms. In desperation he went to Vienna and consulted Dr. Von Noorden regarding the diabetes. To his great surpise he was informed that he did not have diabetes, but that he had a goitre, and that he should go back to the United States and ask Dr. Charles H. Mayo to remove it, and that he would get well.

Dr. G. came back to the United States and went to Rochester. At this time his urine was loaded with sugar. Under novocaine (the only anesthetic permissible because of Dr. G.'s cardiac condition), Dr. Mayo removed a large substernal goitre. Dr. G. remained in bed for one day, was in the hospital three days, and returned to Philadelphia in eight days and resumed the practice of medicine. Dr. Mayo told him that he would gain ten pounds a month for three months. As a matter of fact he gained fifteen pounds a month for three months. All of his symptoms disappeared within three weeks after his operation—tachycardia, exophthalmos, glycosuria, etc., and now, six years later, there is no return of any of these symptoms. It is unfortunate that Dr. G. had to go as far as Vienna for a correct diagnosis, but we are highly pleased that he was returned to America for thyroidectomy. From what I was told of this case I believed that it was one of diabetes. True diabetes is a rare accompaniment of Graves's disease, although alimentary glycosuria occurs in twenty-five to thirty per cent. of cases, according to Schultze and Hirschl. Crotti says that a number of clinical as well as experimental observations seem to prove that there is an intimate relation between the thyroid and glycosuria.

With probably little or no risk of criticism or contradiction, and with thanks to Gauthier, Kocher, Mayo, and others, goitre is now regarded generally as a surgical disease requiring surgical treatment, but I cannot refrain from asking the question, What has become of the once high and mighty iodine? Of noteworthy antiquity in the treatment of goitre, lauded and heralded for centuries, where is it today? Were its much vaunted claims exaggerated and false, or did the surgeon come along and with one fell blow rob it of its exalted place in goitre therapy? No matter how it was done, the fact remains that iodine was tried for many years, but in the end was found wanting, and no other drug has been forthcoming to take its place and make good.

The history of this fascinating medical problem proves to us that for many years the goitre itself, i. e., the enlarged thyroid, was regarded as a symptom, an incidental, secondary development in the clinical syndrome of Graves's disease. When, in the light of more modern knowledge of hyperthyroidism and a better pathology, the thyroid gland itself was singled out and held responsible for the toxicosis, the surgeon said the logical thing to do was to cut it out. Kocher and others proved that this logic was good, and a new era of treatment of thyroid diseases was thereupon inaugurated. The surgeon's experience grew and his technic improved; he learned when to operate and when not to operate; to extirpate a lobe or only to ligate a bloodvessel; to change his patient from being a poor surgical risk to a good one by "playing for time," by keeping his patient in bed, by prescribing x ray therapy, by administering drugs, and by making practical application of Crile's anociassociation idea. And, thanks to the scientific work of the surgeons of our own land and of those abroad, the successful treatment of goitre today is preeminently surgical and is firmly established.

Speaking now for myself (and I suppose I am permitted to do so with propriety), what I know about goitre and hyperthyroidism I have learned from the masters at whose feet I have had the pleasure of sitting, and at the same time from a fairly large personal experience which here, as elsewhere, is, after all, the best teacher. It is at least indispensable.

Cases of goitre, when the surgical risk is being estimated, should be carefully selected. If the patient, male or female, presents the characteristic swelling in the front of the neck, which rises and falls with deglutition (the pathognomonic, diagnostic sign of goitre), if this thyroid enlargement is a cosmetic deformity even of minor degree, if it interferes with the prevailing style of dress, if it is or is not increasing in size, and if there are any symptoms of pressure or of irritation, such as a feeling of weight on the front of the neck, dyspnea, hoarseness or cough—a partial thyroidectomy is justifiable, provided there are no symptoms of pronounced thyrotoxicosis. Both the patient and the surgeon can approach such an operation confidently expecting a good result, with relief of previous symptoms and a minimum degree of scarring—a phase of the situation which the feminine subject is quite sure to inquire about in advance.

On the other hand, if there are positive symptoms of hyperthyroidism, viz., tachycardia, headaches, nervousness, and tremor, and I mention these symptoms in the order of their relative importance to my mind, and the more frequently seen eye symptoms, those of Dalrymple, Von Graefe, and Stellwag, such a patient must receive preliminary treatment for several weeks before even a conservative operation is done. And then the surgeon and the patient are taking a chance.

I am sure every surgeon accepts the low collar incision of Kocher as the ideal one for a thyroidectomy. It gives the best and the greatest exposure; plenty of working room is essential to keeping out of trouble—one secret of success in surgery. Several times I have employed Kocher's angular incision for a small, unilateral adenomatous goitre, and it proved to be satisfactory in such cases. The scar from the low collar incision is completely hidden from view by the neckwear of the male subject, while in the female the scar can be hidden by a necklace.

It is advisable to include skin, subcutaneous tissue and platysma muscle in the flaps thus formed by the collar incision, and after they have been well retracted the prethyroid muscles should be divided transversely at a high level. I believe it to be quite unnecessary to split the deep fascia vertically in the median line from the thyroid notch to the sternum. Moreover, a median vein is likely to be encountered here, and dividing this is annoying. I wish to emphasize the value of dry dissection in isolating the goitre from its surrounding attachments, and the value of dislocating the thyroid lobe from its bed, advice given by that peerless authority, Theodor Kocher. And the surgeon should conscientiously obey the admonition of Charles H. Mayo to get inside the surgical capsule, as he calls it, and to leave the posterior portion of this capsule *in situ*, the better to protect the all important structures, the parathyroids, and the recurrent nerve, in the danger zone.

As all my surgical readers well know, the entire thyroid lobe of one side, the isthmus and a portion of the opposite lobe may be removed without the risk of precipitating surgical athyroidism or cachexia strumipriva. When resecting the thyroid the surgeon must exercise his best judgment as to how much of the gland may be removed. Mayo says four fifths may be taken away without fear, and I have followed his advice with safety and success. In one or two cases only have I been obliged to resort to opotherapy because of surgical athyroidism; and then only for a limited period of time.

It is often a question in my mind, where the disease has invaded the entire gland, which is more or less completely degenerated, whether a large or a small portion of thyroid tissue should accordingly be left for carrying on the proper function. After all, I believe this is a question which must be left to the surgeon's personal judgment. Should most of the gland be removed because it is so seriously and extensively diseased and studded with cysts, or should a larger portion be retained because it is diseased and therefore its secreting function is diminished and altered?

How should this removal be accomplished? 1. By excision, or freeing the entire lobe from its surgical capsule after ligating the superior and inferior thyroid arteries. This method entails more work in the danger zone, and hence is more difficult for the operator and is attended by greater risk to the integrity of the recurrent nerve and the parathyroids.

2. By enucleation, or opening into the thyroid tissue to drain cysts and colloid collections, and to remove adenomata. Of course, this is a conservative method and is to be recommended when the operator has had only a limited experience in goitre surgery; when the opposite half of the thyroid is atrophied or has been previously removed, i. e., when the operator must be as economical as possible with the glandular tissue; when isolated pathological lesions are present in otherwise healthy tissue; and when the goitre is adherent to its capsule as the result of previous inflammation (strumitis) or traumatism from injections of boiling water or drugs.

3. By resection, first practised by Mikulicz, which has grown rapidly in favor with American surgeons. This can be either cuneiform or transglandular. If the latter method is employed, accidents to important structures cannot occur, because a layer of glandular tissue, attached to the posterior capsule, is permitted to remain undisturbed, thus protecting the recurrent laryngeal nerve and parathyroids. Moreover, this transfrontal resection has considerable cosmetic value, as it distributes the remaining part of the gland (one fifth or more) on both sides of the trachea, and if only one side is resected, and at some subsequent time it should become necessary to operate upon the opposite lobe, the likelihood of a hypothyroidism is greatly diminished. Formerly the surgeon feared to leave any raw thyroid surface in the operation wound, because of the supposed risk of precipitating an acute thyrotoxicosis through the sudden absorption of a large (lethal) quantity of thyroid secretion. Time and experience have proved this to be a fallacy, and today a large, open, or raw glandular area is frequently permitted to remain, and without untoward effect. No matter in what special way the enlarged and diseased gland is disposed of, the secret of the technical success in goitre surgery is to proceed systematically with each step, *seriatim,* accomplishing one technical point before taking up another.

But very different is the treatment of Graves's disease with its serious hyperthyroidism. Here the surgeon and the internist ought to cooperate from the start, and likewise to combine their efforts after operation. This is my custom in these serious cases, and I have repeatedly seen the benefit of it. One internal remedy that I know to be of real value in controlling the toxic symptoms, especially the tachycardia and the headaches, is lycopus virginicus, the dose of which is five minims of the tincture every three or four hours.

Crile suggests anociassociation in preparing these toxic patients for operation, and Charles H. Mayo advises repeated x ray exposures for the same purpose. I have followed the advice of both of these men in this regard with great satisfaction, although I have modified the anociassociation somewhat. I will explain by reporting a case:

CASE.—Mrs. L. P., aged fifty-three years, had suffered for fourteen months with nervousness, headaches, and palpitation. Her past personal history was otherwise negative. She was a native of the state of Delaware, and there was no goitre in other members of her family. Examination showed a small, thin, nervous woman, with prominent eyeballs. She winked quite infrequently, and when her eyes were rotated downward the upper lid followed in a jerky, spastic stort of way. There was a tremor of the hands. Her heart was thumping forcibly; pulse 120. On the front of the neck was a prominent swelling which rose and fell with deglutition and which had the outline of the thyroid gland. The superficial veins overlying this swelling were distended. There was no bruit heard over this tumor, nor was there any expansile pulsation. A diagnosis of Graves's disease was made.

This patient was put to bed and kept there for two weeks; lycopus virginicus, internally, was prescribed; every day or two a few whiffs of ether were administered, and occasionally a hypodermic of sterile water was injected. She improved in spirits and felt better physically; her pulse was lowered to ninety and her heart action was much less turbulent. One day we gave her a hypodermic of scopolamine, one hundredth of a grain, ether inhalations to full narcosis, and I ligated both superior thyroid arteries. The effect of this trick treatment was most successful, and the patient made an ideal recovery. Today she is free from all symptoms of thyrotoxicosis, although no thyroid tissue had been removed.

This same plan of preparation I have followed in many other similar cases, and with universal success, except in one case to be reported later. Getting control of the patient by anociassociation, by rest in bed, and by the administration of some indicated drug, lessens the nervousness, ameliorates the headaches, and calms the excited heart. Furthermore, it allays the fears of the patient and promotes a feeling of confidence in the surgeon and in his treatment. And all this is necessary to pave the way for even the ligation of one superior thyroid artery. I believe it ought to be a routine method of preparation in every honestly toxic case. Several years ago a woman, thirty years of age, with some enlargement of the left thyroid lobe and with moderate but positive symptoms of Graves's disease, was referred to me. The symptoms were apparently not severe enough to necessitate a course of preliminary treatment, and yet it was evident that even a partial thyroidectomy was prohibited at the time, that it would be trifling with the toxic goitre, and taking unwarranted chances. Therefore, under nitrous oxide and ether anesthesia, I ligated the left superior thyroid artery. Before I had closed the small operation wound, the patient quietly died. I assumed that this was a socalled goitre heart death; the patient's heart simply stopped.

CASE II.—Mrs. R. N., aged twenty-seven years, had been failing in health for five years. Her thyroid gland was moderately enlarged. The circumference of her neck was fifteen inches. She had headaches, occipital and frontal. Her eyes were prominent; she was hoarse at times, and her throat felt constricted. There was much palpitation, but no pain, and no gastrointestinal symptoms. She was very nervous. Urine was normal. All these symptoms were made worse by a pregnancy two years ago. A diagnosis of Graves's disease was made.

This patient was kept in bed for one month except when she went to a röntgenologist for x ray treatment. She also received internal medication, and her general condition improved considerably. She was then admitted to a hospital, where she was detained in bed for a few days and fake etherizations administered. Then, by employing Kocher's angular incision, I ligated the superior and inferior thyroid arteries on the right side. The recovery from this operation was satisfactory, and the patient's condition improved considerably. Three months later I again put her through the preliminary course of treatment, administered nitrous oxide and ether, and she died on the table before I had time to resect a part of the right lobe.

The death just referred to occurred in October, 1917, and, although I have operated in many cases of simple and toxic goitres since then, I have been more fortunate and have lost none. Moreover, the ultimate results have been satisfactory. In preparing this subject for presentation before your society, I made many inquiries during the past two weeks, of physicians and patients who were within reach, as to the final result and the degree of cure following operation for goitre. I am pleased to say that invariably the report came back that the cure was genuine, the symptoms of pressure were relieved, the tachycardia had subsided, the patient had gained in weight, and the scarring of the neck was insignificant.

I have had two cases of malignant goitre, in one of which I removed the diseased gland and performed tracheotomy. The woman persisted in pulling out the tracheal tube, and died from respiratory obstruction. The pathological report of her goitre showed it to be a combined carcinoma and sarcoma. This was an exceedingly rare malignant goitre.

REFERENCES.

1. Kimball, Rogoff, and Marine: *Journal A. M. A.*, December 20, 1919.

601 Medical Arts Building.

SUCCESSFUL SURGERY IN CASES WITH ENDOCRINE DISTURBANCES.*

By William Neumann, M. D.,
Brooklyn, N. Y.,

Visiting Surgeon, Bikur Cholim Hospital, Brooklyn, N. Y.; Consulting Surgeon for the Home of the Sons and Daughters of Israel.

ENUCLEATION AND EXCISION OF LARGE CYSTIC GOITRE FOR HYPERTHYROIDISM.

Case I.—Miss G., nurse, single, forty years of age, English. Family, personal and venereal histories were negative. The patient complained of choking and smothering sensations, temporal headaches, nervousness, and throbbing in the head and of vessels throughout the body.

Course of the disease.—The patient had noticed a slight growth or fullness in the front part of the neck about eighteen years ago. This fullness increased gradually until five years ago when the growth became rapid, involving the left side and then the right, thereby bringing about a markedly deformed appearance in this region. In addition to this she also complained of general muscular weakness, lethargy approaching complete exhaustion, muscular twitchings, fine tremor, gastrointestinal disturbance and diarrhea, insomnia, flushings of the face, palpitation, hyperidrosis, swollen legs, dysuria and bulging eyeballs.

Physical examination.—Slight plethora, patient fairly well nourished, pupils dilated, good reaction to light but not accommodation, marked exophthalmos, positive Graef's, Stellweg and Moebius signs. Neck was seventeen and three quarters inches in circumference. On palpation we felt a large, soft, movable, round, deep pulsating, and distant fluctuating goitrous mass. The cardiac area was much enlarged, first myocardial sound feeble, second aortic and pulmonary sounds accentuated. The pulse was very irregular as to rhythm and tension and ranged from 100 to 160 in rate. The circulation was not well sustained. The vessels throughout the body seemed to be pulsating and bounding. The skin was thin and shiny and although appearing healthy and at times flushed it was apparently poorly nourished. The liver was somewhat enlarged, spleen palpable and a small amount of ascites present. There were also signs of congestion of the bases of both lungs and marked edema of both lower extremities. The sensorium was hypersensitive and the reflexes were increased. The urine showed a great amount of albumin and numerous casts.

Diagnosis.—Cyst adenoma and hyperthyroidism with exophthalmos.

Operation.—After introducing a conductive local anesthesia of one half of one per cent. novocaine and adrenalin (made freshly from Braun's (A) tablets with normal saline) and the patient in the reverse Trendelenburg position, with head extended and neck well exposed, an improvised Kocher goitre frame was placed in position to protect the operating field from contaminating drops of sputum, sneezing, etc. The operating field was then cleansed with soap and water and alcohol. No iodine was used because its absorption produces toxic symptoms and is dangerous in all these cases of Basedow's type. A transverse Kocher incision was made in the skin crease over the most prominent region of the tumor. This incision cut through the skin, fascia, and thin fibres of the platysma myoides muscle. These edges were bluntly dissected up and down from the underlying surface. Then we cut the sternohyoid and sternothyroid muscles at a higher level near its insertion, thus relieving the tumor which popped out as though from a trap door. The goitre tumor presented itself as an extraordinary display of colors showing a very thin capsule studded with vessels. The right superior thyroid artery was tied after the luxation of the mass. The tumor was freed by blunt separation from its adhesions and luxated to the other side. Close to this mass the isthmus was compressed with crushing forceps on its right side, ligated and cut. In the incised plane or cut surface beneath the extraordinarily thin and vascular capsule propria we separated the capsule from the mass in an up and down direction with the fingers and Kocher's blunt dissecting knife, controlling all bleeding points with ligatures. This was done in such a manner as to form a pedicle from the capsule and some gland tissue at its upper and outer and lower and outer portions. Raising it, the crushing forceps was introduced into the capsule over the pedicle and with a ligature aneurysm needle it was ligated. This maneuvre was continued until the mass was properly separated up to its upper and lower poles. The mass was then rolled out bluntly from the back of the capsule and some gland tissue and was loosened until it hung out at a considerable distance like a door hinge from the trachea. Avoiding the recurrent laryngeal region, we then crushed, ligated and cut the pedicle of this mass near the tumor, so that plenty of gland tissue was left and the four parathyroid bodies kept intact, to preserve the functions of these glands and their secretions that are so vital to the organism. The remaining part of the posterior portion of gland tissue or capsule was sutured together with an over and over stitch. A small rubber tube was put into it. The sternohyoid and sternothyroid muscles were sutured and the platysma myoides muscle was separately sutured, this for cosmetic effect, and then the skin was sutured with subcuticular suture and the small rubber tube drain was made to emerge from a separate skin opening at a lower level, for drainage.

---

*Cases presented before the Society for Clinical Study at the New York Diagnostic Clinics, May 26, 1920.

In this case enucleation by itself would have been dangerous on account of the uncontrollable hemorrhage it would produce because of the extraordinary vascularity of the capsule or gland tissue. Excision alone would also be very dangerous because it is paramount that we should conserve some glandular tissue in the recurrent laryngeal region and keep the four parathyroid bodies intact, which structures are so important to the vital function and life of the organism. Therefore, we resorted to the combined methods of resection or excision in front and enucleation behind. A small drain was then left in the capsule to emerge from an opening low down in the skin. The platysma myoides was sutured separately and also the sternohyoid and the sternothyroid muscles individually. The skin was closed with subcuticular sutures.

Aftertreatment.—The patient was given a quart of warm saline solution slowly by rectum. This was repeated twice in twenty-four hours. The drainage tube was removed after forty-eight hours and one quarter grain of morphine given in two doses. She sat up in a chair on the fifth day, walked about the room on the eighth day and was discharged from the hospital (Dr. Wade's sanitarium) on the eleventh day. The patient made a complete recovery and is free from all the symptoms today. The operation was performed on May 28, 1919.

DISCUSSION.

Although in some cases of goitre we find evidences of hyperthyroidism, yet in most cases we experience hyperthyroidism, as in the patient referred to above, we found advanced thyrotoxicosis with marked myocardial degeneration. It is due to hyperfunction of the hypertrophy of the secretory portion of the gland that secretes an overabundance of iodothyroglobulin that is responsible for the thyrotoxicosis or dyshormonism. Emotions and colonic infection are probably contributory causes. In these cases cosmetic effect is very important. The severing of the muscles at a higher level than the skin, the skin incision in the line of the skin crease, the separate suturing of the platysma myoides muscle, the drain skin opening low down and the subcuticular skin suturing were all for cosmetic effect, especially when the patient is a woman. In this case the result is so wonderful that one cannot notice any scar unless it is shown. Emphasis must be placed upon the necessity of preserving the parathyroid bodies. Their excision may bring on tetany and often instant death. The inferior thyroid arteries were not ligated to insure a good blood supply to the true capsule and parts left.

Choice of operation and advantages of local anesthesia.—My choice of operation was here a combination of methods of excision and resection in front and enucleation behind for the purpose of preserving plenty of gland tissue to prevent hypothyroidism and also not to interfere in the dangerous recurrent laryngeal region with the parathyroid bodies and recurrent laryngeal nerve that were left intact. The choice of novocaine and adrenalin as an anesthetic was here most ideal as the patient was in a moribund condition. She was in an extreme toxic state and heart and lungs were gravely affected as well as the kidneys. This local anesthesia also helped here to reduce shock and trauma to a minimum. The tissues could not be handled roughly as the patient was conscious. While working in the posterior part of the gland we kept up a conversation with her to insure ourselves of the integrity of her phonation as an important sign that the recurrent laryngeal nerve was not injured or interfered with. Postoperative ether retching and gagging are a cause of loosening and rupturing vessels, and also cause aspiration, pneumonia and tracheal infection.

It may not be amiss to add that the patient was considered a bad risk by several surgeons who do special goitre work, for the reason that she was too toxic and that her kidneys and heart were badly degenerated. They proposed to her to go to a hospital for two months' rest and eventually tie off some of the superior and inferior thyroid arteries to decrease the blood supply and henceforth diminish the thyroid secretion, or hypersection and toxemia. When she was referred to me I noticed her bad physical condition, but undertook to operate upon her in one sitting under local anesthesia, using a combination of methods as heretofore stated and taking all other precautions necessary in a local anesthesia to bring about a radical cure. The hyperthyroidism was so advanced that it was beyond our hopes and expectations that the cure would really be so prompt and complete as it was. Four weeks after the operation there was no albumin in the urine and all other abnormal signs of the affected heart and organs, such as general edema, exophthalmos, ascites, and myocardial degeneration, had disappeared. As to the cosmetic effect, there was hardly any noticeable scar on her neck, and she is at present enjoying excellent health. For several months past she has occupied her regular responsible position of having in charge the nursing service at the Community Hospital of New York.

MONOCRYPTORCHIS WITH CONGENITAL HERNIA AND DYSPITUITARISM.

Case II.—Male, twenty-two years of age, single, was admitted to the Bikur-Cholim Hospital, Brooklyn, N. Y., on May 5, 1920. His family, personal and venereal histories were negative. He had never had sexual relations although he frequently had erections and seminal emissions. About a year ago he called to see his family physician, Dr. M. Kaufman, of Brooklyn, as he was suffering from piles and constipation. Upon physical examination Dr. Kaufman found his patient to be a well nourished boy, rather youthful looking for his age, with a youthful masculine voice, and avirile. There was no facial or axillary hair and a reduction of pubic hair, with a tendency towards acquired corpulency. The heart and lungs were normal and also the urine. An examination of the genital organs showed a very small glans penis, a small transverse fold of tissue supposed to indicate the scrotum, and a slight elevation or bulging, somewhat tender, in the left inguinal region near the internal ring, but with no definite mass feel to the touch. Nothing abnormal could be felt in the inguinal region on the right side. No evidences of testicles were felt on either side. All other examinations were negative.

Operation.—After introducing local anesthesia of one half of one per cent. novocaine and adrenalin, first on the left side then on the right, an oblique incision from the internal abdominal ring down to the pubic spine was made on the left side; the inguinal canal was laid open and exposed and contents noted. We encountered a soft mass outside of the sac which contained the rudimentary testicle and its coverings suspended on a very small cord about three quarters of an inch long. This cord led on to another mass which was the hernial sac (a typical shining peritoneal membrane) but very small and thin and it contained omentum, intestine, with the vas, vessels and nerve forming a part of its inner wall. We then carefully dissected out the constituents from the testicular mass separating each, the rudimentary testes, vas, vessels and nerve down to the hernial sac. The sac was opened; because it contained also as part of its inner wall vas and vessels it indicated the presence of a congenital hernia. The vas deferens, spermatic vessels and nerve were carefully freed from all adhesions to the hernial sac, leaving the latter intact and then were resected and lengthened. The opening of the very thin hernial sac was closed after replacing the omentum and intestines, leaving enough space for the separated structures of the cord to emerge. Those freed uninjured and lengthened, vas, vessels and nerve were brought down to the thigh. Now the transversalis fascia was freed and loosened from the underlying surface and lengthened along the depth of the inguinal canal down to the scrotal fold of skin. Into this scrotal fold we incised and grooved the inside, thus forming a regular sac into which the loosened transversalis fascia and testicle suspended upon the separated structures of the cord were brought down to the bottom. A buttonhole incision was made through the new formed sac through which the testicle was brought out and again the two edges of the incised wall of the scrotum were united with mattress suture, thus holding the testicle at the lowest level of the scrotum. The upper entrance of the new formed scrotum was then closed up with mattress suture, and the operation was completed by modified Bassini operation. On the right side a similar incision was made and the inguinal canal was exposed. No evidence of testes or cord were found. It was then closed up.

DISCUSSION.

These operations are delicate. The success or failure of results in these cases depends upon how carefully the separation, resection, or division of each structure and its lengthening is carried out without injuring or tearing. During this resection it is important to exercise every caution while resecting and dividing the structures from the wall of the extremely thin hernial sac not to tear any of them. Equally important is the method of properly grooving out and sliding down the loose transversalis fascia to help form the inner surface of the sac.

The developmental anomaly cryptorchism is not rare but permanent cryptorchism is rare. There are two forms, abdominal and inguinal. Occasionally the condition is accompanied by testicular maldevelopment with lack of all functions depending upon the proper activity of the Leydig cells.

Again, despite the complete burial of the testes, they may be functionally active, in which case there is sterility in individuals none the less potent, the sterility being mechanical rather than functional. Such patients are not subject to the same degree of asexualism as exists in pure castrates or infantilism. Eunuchoidism is an acquired disorder of the interstitial cells of Leydig and those with this disturbance are quite similar in functional incapacity to a castrate but without the absence of the testes. These conditions are usually associated with dyspituitarism. As a rule, undescended testicle is not due to adhesions, as formerly thought, but to some pathological condition or abnormal lining of the Leydig cells. In such cases operation is essential in order to avoid the possibility of complications such as cancer, torsion of the cord and axial rotation, causing strangulation and probably gangrene of involved structures.

Since the operation hair has been growing more profusely over the pubic region, also growing in the axillary region and on the face. With corrective surgery it is advisable to administer endocrine treatment, such as pituitary extract in one grain doses, three times daily. We are much gratified with the physical results in this case. The patient has a fair scrotum now and the testicle that was brought down into it can be easily felt. His family physician reports to us at the time of this writing that the patient is feeling much better as regards his sexual sense and mentality. As to the functional activity of the testicle with reference to its internal secretion we are uncertain. We shall try the endocrine treatment in conjunction with the surgery and watch the results.

* * *

I wish to thank Dr. Hyman Goldstein, assistant medical director of the New York Diagnostic Clinics who presided at the meeting of the Society for Clinical Study May 26, 1920, for assisting me materially in both of these cases.

583 Bedford Avenue.

THYROID DEFICIENCY IN OTOLARYNGOLOGY.

By James G. Callison, M. D.,
New York.

Some time ago Miss J. G. was referred to me by a colleague for a tonsil operation. She was twenty years of age, obese, weighing about a hundred and seventy-five pounds, with a smooth, soft skin and a fair complexion. The tonsils were large, infected; the throat seemed to be unusually full, and she complained of difficulty in breathing, especially at night. I assured her in full confidence that she would be all right after an operation, as she would be free from the infection in her tonsils and would have more breathing room. On the operating table I found the tongue so large, after relaxation with ether anesthesia, as to render the operation difficult and to interfere with attempts at stopping the troublesome, oozing hemorrhage which followed. After the operation the tongue interfered with breathing while she was coming out from under the anesthesia, and the postoperative reaction was unusually severe. Healing was prolonged, occupying almost two weeks.

After the operation the patient was in a worse condition, so far as her breathing was concerned, than before, and she made life miserable for me, as she felt that I ought to be able to do something to give her relief. A careful examination of her throat a month after the operation showed that the tongue, which had been cushioned forward by the tonsils, now rested squarely against the posterior pharyngeal wall, thus interfering with breathing. This condition was rendered worse by relaxation during sleep, and as soon as the patient fell asleep her breathing was seriously interfered with. There seemed no remedy for the condition, as the tonsils were out and could not be replaced. In order to get rid of the patient, for whom I was able to do nothing, I referred her back to the family physician, with the recommendation that he place her on thyroid medication, remembering a remark I had heard somewhere that "Those large tongues might be due to thyroid dystrophy of a degree not severe enough to cause myxedema or cretinism." Some months later I had a report that this patient was doing well under thyroid medication, and that her breathing had very markedly improved. But with the carver of tombstones I can say: "She is gone, but not forgotten."

At about the time that I received the favorable report from Miss J. G., a young Italian boy, who said he was fourteen years old but who looked to be not more than eight years, wandered into my clinic at St. Mark's Hospital, and said his family physician had sent him to have his tonsils removed, in the hope that it would improve his general condition. He was so evidently undersized as to leave no doubt that he was a probable victim of thyroid deficiency. He was admitted to the hospital for operation under general anesthesia, and when relaxed with the anesthetic showed the same oversized tongue, the same oozing hemorrhage postoperative, and the same severe reaction as had Miss J. G. As he returned to the clinic only once after the operation, I cannot say whether he exhibited the same slow healing of the wound. Presumably he did.

These two cases with large tongues, oozing postoperative hemorrhage and severe reactions after operation, led me to inquire into the physiology and pathology of the thyroid gland, in order to see if it were possible to recognize the type before rather than at operation, and institute some form of preoperative treatment. This course of reading has opened a series of speculations so interesting, and which seem so practical, that I feel justified in presenting them in otolaryngological literature, although most of the facts herein presented have been long known in the literature of the internal secretions.

GENERAL CONSIDERATIONS.

The physiology of the ductless glands is exceedingly complex, one reacting on the other as a stimulator or inhibitor, until it is very difficult to establish a fact with regard to any one gland. The pathology of these glands is even more involved than their physiology, as destructive diseases are not common, and where there is a positive pathological lesion the interrelations of the glands so mask the symptoms that an interpretation is difficult. The simplest and most logical place to begin a study of the disturbances of the endocrine system is in the thyroid, as it is the largest gland of internal secretion, has the largest number of proved disturbances to its credit, and exercises a controlling influence over many, if not all, of the glands of internal secretion. Also, its physiology has been more certainly established than is the case with any of the other glands of internal secretion. In what follows I shall confine myself to a study of the thyroid, although it is not the only gland of internal secretion which plays a part in the pathological anatomy and physiology of the ear, nose and throat. To attempt more than this would unduly prolong this study and lead to complexity rather than clearness.

PHYSIOLOGY OF THE THYROID GLAND.

McCarrison, in his very interesting book on the thyroid, says: "So far as is at present known, the functions of the thyroid apparatus are four in number: 1. It governs the growth of all cells, and sustains their functional activity. 2. It controls calcium metabolism. 3. It is a profound catabolic stimulant, facilitating the breaking down of exhausted cells and governing the elimination of waste products of their disintegration. 4. It exercises a protective, antitoxic and immunizing action, defending the body not only against the toxic products of its own metabolism, but against invasion by disease producing microorganisms and injury by their products.

"So far as we know its metabolic activities are exhibited in the following ways: It regulates the oxygen intake and the carbon dioxide output. It maintains the constituents of the blood—the red cells, the white cells, the hemoglobin and salts—at a proper level. It has an important influence in regulating the body temperature. It controls the metabolism of those metallic ions necessary for cellular activity, and of albumins, carbohydrates and salts; it influences arterial tone and is thus concerned in the regulation of blood pressure; it maintains the activity of the central and sympathetic nervous system; it controls excretion by its physiological diuretic action on the renal epithelium and by its action on the liver cells and excretory organs of the body; it stimulates in a specific way certain other hormone producing organs in the body, thus securing and controlling their cooperation in regulating metabolic processes; in short, it maintains the efficiency of all cells, and thus speeds up and keeps at a healthy level every bodily function.

"The thyroid gland is specifically associated in the exercise of its functions with the generative organs, the liver, the pancreas, the adrenals, the pituitary gland, and the thymus. Besides maintaining the nutrition of the cells of those organs and of their sympathetic nerves, through their agency it controls bodily growth and metabolism in certain directions. Thus, by stimulating the growth and development of the sex organs the thyroid secures through them the progress of mental and physical growth; witness their suppression in cretinism and juvenile myxedema. Interacting with the pituitary body it is thought to influence skeletal growth; the pituitary is thought to compensate in some measure for the thyroid in case of the impaired activity of the latter, since in cachexia thyropriva and myxedema the hypophysis may attain two or three times its normal size. The thyroid stimulates and is stimulated by the adrenals, thus indirectly controlling the blood pressure and securing the supply to all parts of the body of perfectly oxygenated blood. Interacting with the thymus, through the agency of the lymphocytes of this organ, it is thought to regulate the supply of the excess of phosphorus in organic combination which certain systems, particularly the osseous and nervous, require during development and growth. It inhibits the action of the pancreas, which is hyperactive in subthyroidic states, and regulates the storage of glycogen in and its discharge from the liver. Thus by its interaction with the liver, the pancreas and the adrenals, it regulates carbohydrate metabolism. The profound influence which it exercises over calcium metabolism is exerted through the medium of the gonads, thymus, pituitary, and probably other endocrine organs.

"The whole question of the thyroid's interaction with other organs, whether by the existence of its secretion of hormones having specific affinities for these organs, or by other means, is, however, still but little understood.

"As illustrating the remarkable action of the thyroid secretion on growth may be mentioned Carrel's finding that brain and other tissues cultivated *in vitro* grow several times as fast in the presence of thyroid substance as in its absence."

Hertoghe fully confirms these important functions of the internal secretion of the thyroid gland, but his language is more general. In discussing cell destruction after the cell has become physiologically old, he has this to say, which throws much light on the pathological processes to be discussed later:

"After the cell has been in physiological performance of its function for a certain length of time, it degenerates. The albumin molecule breaks up into its component parts, and is eventually eliminated by way of the skin, the lungs, the intestines, and in the form of water and urea. As long as the function of the thyroid is normal, this process of elimination continues. As soon, however, as thyroid activity is impaired, the products of decomposition cease to be carried off at the required rate, with the result that they accumulate *in situ* in the form of mucin, fat, and other byproducts. The cell becomes clogged with them, and a peculiar hard edema, which does not pit on pressure, is the result."

The internal secretion of the thyroid is contained in or is identical with the colloid substance in the acini of the gland. The most important constituent of the colloid is the iodine it contains. It contains sodium chloride in abundance. Cholin, lipoids, and a lipolytic ferment have been found in it. It contains also phosphorus, sulphur, arsenic and bromine. It does not contain mucin or any appreciable amount of globulin. Except in the thyroid of the fetus and in the newborn, when iodine may be absent or exist only in small amount, it is invariably present in the normal human thyroid tissue. Marked variations occur in the iodine content of the gland, not only in individuals of the same species, but also in different species. The iodine content of the food is the determining factor in these variations. Thus sheep pastured at the sea coast show twice the amount of iodine in their thyroids as do those pastured inland. Generally speaking, herbivora, whose food contains a high proportion of iodine, show a high iodine content in the thyroid; carnivora, whose food contains little iodine, show a low iodine content, while in omnivorous animals the iodine content is variable. In the thyroid gland of healthy animals the iodine content runs from one hundredth per cent. to one and sixteen hundredths per cent. The therapeutic value of dried thyroid gland runs parallel to its iodine content.

The colloid secretion of the thyroid is given off to the blood in some way not clearly demonstrated, and is carried to every cell of the body. It is supposed that the secreted colloid escapes from the acini to the lymph spaces, and is then carried to the general circulation. I have not been able to find any statement, however, that the lymph stream leaving the thyroid is richer in thyroiodine than any other lymph stream in the body. It may be taken up by the leucocytes. The amount of opsonins and alexins in the blood can be predicated on the activity of the thyroid gland. Sajous states that the opsonins of the leucocytes and the hormone of the thyroid gland are identical.

CAUSATION OF THYROID DYSTROPHY.

Thyroid deficiency may be brought about by conditions under which there is an insufficient production of the colloid or by those conditions that cause an overconsumption of the colloid—conditions requiring unusual metabolic activity or an unusual amount of detoxication. The conditions most surely inducing an under supply of colloid in the thyroid gland is deficient, defective or improper food supply. Severe thyroid deficiency diseases are almost wholly confined to the poorer classes, and this refers to the European and Asiatic poorer classes, where malnutrition and undernourishment are the rule. Food poor in iodine and vitamines will produce the same result. An exclusive meat diet will produce symptoms of thyroid dysfunction in those congenitally predisposed, as will also a diet too rich in canned or preserved foods, in which there is a lack of vitamines. McCarrison was able to produce thyroid atrophy in pigeons by feeding them on polished rice.

Under the heading of conditions making an excessive demand on the thyroid gland for purposes of detoxication are:

1. Residence in insanitary surroundings. This refers particularly to the water supply and housing, as well as the internal care of the house. In many villages where the water supply is contaminated by human fecal material, either in the wells or streams, goitre and other thyroid disturbances are the rule.

2. Absorption of bacterial and other toxins from the intestinal canal. The microorganisms whose toxins exert the most marked influence on the thyroparathyroid glands are those the normal habitat of which is in the intestinal tract: Bacillus coli and its variants, certain unclassed anaerobes, dysentery bacilli of all classes, and Cholera vibrios. Helminths in the intestinal tract may also produce toxins that will react on the thyroid apparatus. The dose of these toxins required to influence the thyroid adversely will depend on the nutritional state of the individual.

3. Influence of infections and other disease on the thyroid apparatus. Among the diseases having a deleterious action on the thyroid are measles, mumps, whooping cough, scarlatina, bronchopneumonia, acute miliary tuberculosis, diphtheria, secondary syphilis, acute tonsillitis, acute rheumatic fever, malaria, trypanosomiasis, helminthiasis, rheumatoid arthritis, pyorrhœa alveolaris, and intestinal disorders generally. Less marked in their action are the common colds, influenza, acute anterior poliomyelitis, chronic tuberculosis, gout, lead poisoning, and chronic alcoholism. Those having a rare but severe action are typhoid fever, cholera, the dysenterias, general septicemia, puerperal fever, erysipelas and orchitis. Thus it is seen that the thyroid is affected most by those diseases throwing a sudden, heavy load of intoxication on the system. Acute thyroiditis may occur in the course of these diseases, but is rare. Subacute inflammation of the thyroid gland is more common in secondary syphilis and acute articular rheumatism. Chronic inflammation of the thyroid may arise in the course of these diseases and pass unnoticed until a cure is effected.

After recovery the thyroid deficiency may make itself apparent. This result is most common in the infectious diseases of childhood, to the deleterious effects of which many cases of thyroid insufficiency occurring in children are to be attributed. It is also to such chronic inflammation of the thyroid in adults that hypothyroidism in all its grades is commonly due. Chronic debilitating diseases exert a harmful influence on the thyroid gland, partly owing to their impairment of nutrition and partly to the toxic action of the products of their causal agents. This combined action results in a depreciation of the thyroid's reserve store of physiological energy. Its power of response to stimuli becomes impaired, as does its power to synthesize its secretion; consequently it undergoes atrophy rather than hypertrophy, and the subthyroidic states are constantly to be met with in those who are or have been the subjects of chronic debilitating diseases. The ingestion of toxic material from the tonsils, the gums, or the nasopharynx, is a common source of thyroid excitation.

4. Intestinal toxemia and intestinal stasis. There is a constant association of thyroid impairment of varying degree and intestinal stasis of the type described by Sir Arbuthnot Lane. Most authorities on internal secretions assert that the thyroid derangement is primary, while Sir Arbuthnot Lane holds that the intestinal stasis is primary. McCarrison sides with Lane in this controversy. It will be a difficult question to settle, for whichever way it is attacked, by thyroid medication or by surgery, improvement results. The question will be further dealt with under morbid anatomy and symptomatology.

5. Consanguinity and heredity. Too much stress is, in my opinion, laid on consanguineous marriages and heredity in the discussions of the causation of thyroid deficiency. Many cases are undoubtedly congenital, but none are hereditary. Intrauterine acquirement of a disease is not inheriting it. Adami's discussion of heredity makes this plain. Inbreeding brings out common qualities, strengths and weaknesses, and there may be an inherited tendency to a disease. If both parents are infected, the chances of intrauterine acquirement are greatly increased.

6. Psychic influences. Fright, anxiety and mental distress are factors which have a great influence on the thyroid apparatus. All these mental states are to be regarded as expressions of fear. Under the influence of fear most or all of the organs of the body are either sharply stimulated or inhibited. Those that are stimulated are the entire muscular system, the vasomotor and locomotor system, the sense of perception, the respiration, the mechanism for the erection of the hair, the sweat glands, the thyroid gland, the adrenal gland, and the special senses. On the other hand, all the digestive and procreative functions are inhibited. This combination of stimulation and inhibition throws a great additional load on the thyroid apparatus. Fear may also influence the thyroid indirectly through the adrenals, with which it is known to be intimately associated in its activities.

It is thus seen that the factors which are responsible for morbid conditions of the thyroid gland are of three great classes: Nutritional, infectious and psychic. All of these may act together in the same individual, the influence of one favoring the action of the other. Especially is this true with regard to nutritional and microbic factors, the nutritional favoring the action of the microbic, or the microbic, by producing disordered states of digestion, assimilation or absorption, inducing disturbances of nutrition.

PATHOLOGY.

Leaving out of consideration for the present the tumor formations and the inflammatory reactions of the thyroid gland, the results of stimulation of the thyroid, whether of a nervous origin, through the call for more of the iodine containing secretion on the part of the tissues, or chemical or toxic from absorbed material, will be the same. The first stage of the reaction will be a response in the form of greater secretory activity. This will result in the absorption of the colloid from the acini, the epithelium becomes of a higher columnar type, the number of cells increases, requiring a longer acinar wall to contain them, and the staining reaction becomes irregular and the nuclei more vesicular. At the same time, there is an increase in the vascular content of the capillaries. This congestion has a double purpose, to carry away the synthesized colloid, and to furnish an increased amount of blood from which to synthesize fresh colloid. If the irritation continues, the connective tissue cells react to this increased nutriment supplied them through the formation of new cells, and the interstitial spaces are filled with emigrated leucocytes. This results in a thickening of the acinar walls. From now on the result will depend on the withdrawal or the continuing activity of the stimulating agent. If now the stimulus is withdrawn, the gland will return to normal. If it continues at a reduced intensity, the gland will accustom itself to the irritant, lose its irritability and return to a colloid state, with the formation of a tumor. In this condition the secreting epithelium may undergo more or less pressure atrophy, the walls become thickened, preventing absorption, and the system suffer from thyroid insufficiency, while at the same time there is a greatly increased amount of secreting gland substance. With a goitre present, the secretion may be sufficient for the needs of the individual, as the increased units of thyroid tissue compensates for the decreased secreting power per unit of tissue.

If the irritant stimulus is continued or its intensity increased, there will be a desquamation of epithelial cells into the lumen of the acinus, with its cellular disintegration, and a final replacement of the thyroid gland with connective tissue. This fibrosis of the gland may occur rapidly or it may be spread over a number of years. There may also, under conditions of hyperactivity, be a functional exhaustion of the gland, with primary atrophy.

In any discussion of the pathology of the thyroid gland, sight must not be lost of the effect of the age of the individual, any more than in other disease conditions. The young individual has a great tendency to recover and grow, to renew himself wherever such renewal is possible. This is as true of organs as of individuals. Fatigue and exhaustion are quickly recovered from. On the other hand, in the individual past middle life, atrophy and decay are the rule, and the effect of unfavorable conditions, toxic or exhaustive, are not readily recovered from. As a consequence a lesser assault is required to produce a permanent lesion of the thyroid apparatus.

In acute inflammatory conditions of the thyroid, there will be abscess formation and the sudden destruction of the gland or a part of it. The end result will depend on the amount of gland substance destroyed. The inflammatory reactions of a chronic nature in any tissue result in an increase in the amount of connective tissue present. This new formation of connective tissue continues as long as the infecting agent is present and acting. The continuous tendency of new formed connective tissue is to contract and exert pressure on the parenchymatous cells of the organ, with an increasing pressure atrophy and the continuing destruction of functioning tissue.

It will be seen that the change in the thyroid gland parenchyma may be at a stage from a scarcely perceptible decrease in its functional activity to a complete destruction of the secreting cells of the organ and their replacement with connective tissue.

SYSTEMIC MORBID PATHOLOGY AND SYMPTOMATOLOGY.

The results of thyroid deficiency begin on one side with the myxedematous cretin and end at the other with symptoms of hyperthyroidism of such a character that at least some of them are included in the manifestations of Graves's disease. It may be congenital or acquired late in life. The deficiency in any of these stages may be complete or so slight as to be imperceptible. To attempt a general description of the symptoms of thyroid deficiency, without specifying the condition of the patient, is impossible. Some statements as to the symptoms may be based on the systemic pathology, if the nature of that pathology is constantly kept in mind. The thyroid secretion, in health, acts on the individual cell as a catalyzer, aiding both in building up and breaking down the cells of the body. This secretion seems to act on organs by acting on the individual cells of that organ. In the discussion of the physiology of the thyroid gland as quoted from McCarrison are these two sentences: "It (thyroid secretion) governs the growth of all cells, and sustains their functional activity. It is a profound catabolic stimulant, facilitating the breaking down of exhausted cells and governing the elimination of the waste products of their disintegration." And from Hertoghe: "As soon, however, as thyroid activity is impaired, the products of decomposition cease to be carried off at the required rate, with the result that they accumulate *in situ* in the form of mucin, fat, and other byproducts. The cell becomes clogged with them, and a peculiar, hard edema, which does not pit on pressure, is the result." This action on the individual cells is observed all through the tissues of the body. There is both an incomplete formation of the new cell and an incomplete removal of the old one. There is both an increase in the number of the cells composing a part, with the interstitial collection of mucin and fat. There is also a slight round cell infiltration about the bloodvessels, with a later formation of new connective tissue cells. It is these conditions that give the tissues the appearance spoken of as "infiltration."

Both blood and lymph circulation in such tissue is interfered with, and nutrition suffers. At the same time that nutrition is mechanically interfered with there is a withdrawal of the catalyzing influence of the secretion of the thyroid gland from the cell. Such tissue will lack resistance to disease brought about by invading microorganisms or absorbed toxins. A nervous system so invaded will not function properly. Muscles so infiltrated will not contract with vigor, an intestinal canal so handicapped will not digest or absorb to the best advantage. Each system in the body so infiltrated gives its own particular response in pathological physiology.

THE MENTAL AND NERVOUS SYSTEM.

The nerve trunks are infiltrated and subjected to compression by the swelling of the surrounding parts, so that the transmission of all motor and sensory impulses is delayed. There is also a distinct loss of excitability of the whole sympathetic nervous system.

Symptoms referable to the nervous system are often among the earliest evidences of thyroid defect. They may, indeed, be the predominant feature of myxedema. These exhibit themselves as an increasing dullness of mental processes: The patient begins to lack ideas, to lose his memory for recent events, to suffer from mental confusion, to become dull witted, to find a difficulty in expressing himself. He may know what he wants to say, but he cannot say it. His speech is sluggish, as well as his mind; he has difficulty in articulation; he cannot be bothered to talk; cannot be bothered to make any mental effort; he becomes indolent and apathetic. He is always sleepy and falls to sleep as soon as he sits down. But his sleep does not refresh him, and he may complain of sleeplessness; in the sense that he gains no refreshment for body or mind, he is sleepless. He wakes up tired in the morning — more tired, in fact, than when he went to bed, and this matutinal fatigue is a very early and characteristic symptom, as well as a very common one; even in the milder cases it is frequently present. He suffers from headache which is either frontal or occipital, usually the latter. It is worse in the morning and may pass off during the day. Patients may be so accustomed to it as to forget to mention it unless questioned. He may suffer from vertigo and loss of equilibrium and is likely to stumble and fall on slight provocation. He is hard of hearing and may complain of noises in his ears.

The lack of nutrition, the infiltration and compression of the nerves give rise to neuralgia and lightning or rheumatic pains in various parts of the body and to difficulty and sluggishness of movement. The reflexes are weak; the knee jerk may sometimes be absent. The gait is stumbling, slow and like that of a man exhausted after great physical effort. The movements of the hands are clumsy and slow and finer movements are executed with difficulty or not at all.

Similar changes involving the sympathetic system give rise to various cardiovascular and vasomotor disturbances. The heart's action is impaired, the circulation is sluggish. The pulse is small and slow and may average only forty to sixty beats a minute. The patient suffers from cold hands and feet, and from chilblains. He feels the cold intensely, and actual Raynaud's disease may be present. The body temperature remains persistently subnormal.

CARDIOVASCULAR SYSTEM AND THE BLOOD.

The heart shares in this general process of infiltration; fat also is deposited between its fibres. This, together with the lack of sensitiveness and infiltration of its nerves, combine to produce slow, weak contractions, with a sluggish circulation and the feeling of cold which is so characteristic. The pulse is slow and small, regular and of low tension. The endothelium of the vessels is impaired in its vitality; its permeability is increased, and calcareous deposits occur in the vessel walls.

Anemia is the rule. The red cell count may be reduced to 3,000,000 or even 2,000,000, and there is a corresponding loss of hemoglobin. Nucleated red blood corpuscles may be found. With the white cells leucopenia is the rule; the total leucocytes may be reduced to 3,000. The lymphocytes are relatively increased and the leucocytes relatively decreased. Coagulation time and bleeding time are both increased. The blood serum is more toxic than that of normal persons, and its bactericidal power is diminished. The opsonins of the blood are reduced.

RESPIRATORY SYSTEM.

The lack of nutrition and the infiltration of the vagal nerves, the infiltration and consequent weakening of the respiratory muscles and the diaphragm, the infiltration of the lungs themselves, and the swelling of the mucous membrane of their bronchi and bronchioles all combine to produce a depression of respiratory function and a sense of oppression. Dyspnea occurs on slight exertion or fatigue and may be so extreme as to cause cyanosis. These attacks of dyspnea may resemble asthma and be mistaken for it. Each patient subject to attacks of asthma should be examined for thyroid deficiency.

BONES, CARTILAGES AND LIGAMENTS.

Ossification is delayed. The fontanelles close late or not at all. The zone of proliferation between the epiphysis and diaphysis in long bones is narrowed, and the union is late or not at all. Fractures heal badly or not at all. A rachitic curve of the tibia is almost invariable in subthyroidic children. The x ray provides an invaluable means of determining the possibility of growth in these cases, by showing whether the epiphyses have formed a bony union with the diaphyses.

Delayed eruption and early caries of the deciduous teeth in subthyroidic children is the rule. In older subjects the crowns of the teeth may become ground down, leaving broad, flat surfaces. Early decay is common.

In congenital thyroid deficiency the ligaments are relaxed and the individual is double jointed. In the acquired deficiency, however, the cartilages and ligaments are infiltrated and the joints are painful, stiff and may crackle. Rheumatic pains and soreness in the bones and joints are a frequent source of complaint, and true rheumatoid arthritis is not uncommonly associated with the disease. Pains in the soles of the feet, flat foot, knock knee and scoliosis may arise in young subjects.

THE MUSCULAR TISSUES.

The voluntary muscles are notably affected by this infiltrating process. The muscle fibres are distended with fat and mucouslike material, their connective tissue as well as their aponeuroses being similarly affected. Consequently their contractions are sluggish and waste products accumulate in them owing to the impairment of circulation and drainage. All muscular movements are slow and executed with difficulty, owing to their impaired enervation, as well as because of their infiltration. The muscles of the abdominal wall are weakened and the abdomen protrudes. This condition of the voluntary muscles easily explains the enlargement of the tongue so often encountered in operations about the mouth, and presages its response to thyroid treatment.

The involuntary muscles are equally affected with the voluntary. Thus the heart's action is further impaired owing to the infiltrated state of its musculature, as is the action of the intestine from a like cause. Precordial pain is frequently complained of, and is the last symptom to respond to treatment.

THE SKIN AND ITS APPENDAGES.

The characteristic infiltration of the skin and subcutaneous tissues in myxedema, which has given to it its name, was originally thought by Horsely to be due to mucin; it is now known to be due to a substance resembling mucus. The myxedematous process results in the proliferation of nuclei and in the formation of new connective tissue fibrils, especially around the sebaceous and sweat glands and around the hair follicles.

The face is puttylike or amber colored, and there is usually present a malar flush due to the presence of small venules. The eyelids are swollen, the palpebral fissure small; the eyes lack lustre and are opened lazily and with difficulty. The lips and alæ of the nose are infiltrated and swollen, as are also the ears. The whole face is masklike and expressionless. The skin feels elastic, does not pit on pressure. The epithelium scales off. Patches of pigmentation occur, especially on the face, forehead and neck.

The hair falls out or becomes prematurely gray. It is coarse and dry, the sebaceous glands failing to oil it properly. The hair first disappears from above the forehead, then from the nape of the neck. The eyebrows are scanty or fall out, especially the outer third; and this eyebrow sign to which attention was first directed by Hertoghe, is one of great constancy and value, especially in the detection of mild cases of the disease. The eyelashes also may disappear and marginal blepharitis may result.

In all subthyroidic subjects the nails are striated and brittle. The teeth are almost always in a lamentable condition, carious, with receding gums, and coated with a greenish tartar that looks like fat. The gums are red and inflamed, and at the level of the dental interstices they are continued in polypoid prolongations.

(To be concluded.)

FATIGUE—ENDOCRINE WEARINESS.

By John McNulty, M. D.,
New York.

The present state of psychophysical fatigue seems, to our present understanding, to be largely the expression of lowered functioning of the endocrine chain of glands—the socalled autoprotective mechanism.

> Fatigue is a phenomenon of metabolism; recovery is a phenomenon of metabolism. Today's research reveals only how much more complex is the body's metabolism than yesterday we thought it to be, and in the problem of fatigue there is probably much more before us than behind us.—Frederic S. Lee, Ph. D., 1919.

The glands producing internal secretions and enzymes are called upon to do excess work to maintain body well being—a task peculiar to the present relation of the ego to its environment—an artificial, imposed environment.

We believe these foregoing brief statements are basic for the serviceable consideration of present day fatigue, its meaning and its management. It does seem necessary and right that we consider the autoprotective mechanism as a whole—a physiological whole. With confidence we affirm that it is only by considering the internal organism or autoprotective system as an interrelated and interdependent mechanism that we can rationally and effectively aid an embarrassed or fatigued organism back to a nearer approach to normal reaction—health.

> Fatigue is a comprehensive term, comprising, in its simple form, the functional state of the organism and its constituent parts after activity.
>
> Then comes a new period of study to *change* the aspect of medicine, and a new period is inaugurated. —Henry A. Christian, 1919.

We are in a new period not only of study but of practice—a period of higher and fuller service, based on new therapy in the light of new physiology. We are commencing to appreciate the calamity of dramatized technic where the operator was successful but the patient succumbed. The rapidly increasing intelligence of the socalled laity is discerning the menace of sheer technic with its lack of values and perspective. The same note of warning must be launched against the endocrine typist—the opportunist who is posing as a capable differentialist between disorders or disease of the endocrine group.

> The functional concept of today has had a very large effect on the treatment of disease. The structural viewpoint of the pathological anatomist of the last century tended toward skepticism as to the possibility of improving conditions by treatment.—Henry A. Christian, 1919.

As we view present therapy, it is the practical but inclusive physiologist—biologist—who is to any degree equipped to improve conditions by therapy. By equipped physiological therapists we mean those practitioners who view and treat the total organism as an autonomic mechanism dependent on normal functioning of all the internal secretions and enzyme producing tissues.

> Today, however, advances seem to be made more along the lines of study of function than of structure.—Christian.

Fatigue, as we see it today, is an expression of under or exhausted functioning of the socalled endocrine chain of glands or tissues; and the rational treatment of psychophysical fatigue is the employment of associated ductless gland substances as they seem to be physiologically associated in the living normal organism.

The important feature to keep in thought in administering associated internal secretions and enzyme substances is quantitative relations as well as qualitative relations. It does seem to us as though gland substances had been given in homicidal quantities in the past, and even today. As ductless gland substances, given for their internal secretion and enzyme content, owe their therapeutic value to vitality rather than volume, they should be given in associated small quantities. These glandular substances, when used to correct, or aid nature to correct errors of metabolism, should be employed as activators, not as stimulants.

> Fatigue is a universal biological phenomenon. The chief sign is, in a word, depression—depression of irritability, wherein a given stimulus calls forth a response of less intensity than before.

Let us here state that glandular substances, in the light of present day therapy, should be given as desiccated substances containing all the properties of the gland and should not be given by the mouth, as internal secretions and enzyme substances administered by way of the alimentary canal gather and are reinforced, in transit, by cobodies, or reinforcing bodies, which does not occur when these substances are given hypodermically.

With our present partial knowledge of the functioning of the endocrine chain of glands, it appears as though the suprarenals were the first to show signs of fatigue, for the simple reason that they seem to have most of the work to do in the autoprotective function; therefore a small quantity of desiccated pig's suprarenals should form part of the formula of associated gland substance employed in the treatment of fatigue—psychophysical weariness.

> Fatigue is due, in great measure, to the depressant action of three toxic products of metabolism on the body tissues, particularly on the muscular system; and the sensation of fatigue is in part the psychic manifestation of the recognition of this depressant action.

We are catching glimpses of the mechanism of body activity, but we desire to see it in its entirety; we must see the phenomenon of physical man as biologist, not merely as a physicochemical phenomenon. In this way we can keep clear in mind that, contributing to the physicochemical betterment of our patient, we are but aiding in restoration of concentration and velocity of reaction. The biological concept of man is aided in holding this sense of relations and values.

> The effects of fatigue and the improvement from rest which we know occur do not show themselves in structure. Tests of function give us a measure of these fatigue changes, whether they result from overuse or are caused by ordinary use of an organ impaired by disease. In recent years our knowledge has been increased greatly by many kinds of depressed and deranged function when we find no parallel structure change.—Christian, 1919.

We are glad to quote the foregoing paragraph as it contributes to establish the fact that new therapy, in the light of new physiology, rightly affirms and demonstrates that the present day therapist is holding, and should hold in thought function, not structure—holding and hearing only the rhythm of the normal, and understandingly aiding nature in her operative law of maintenance or repair.

> · The correlative activities of organs have become of great importance in both an understanding of the body activities and an appreciation of ways and means of influencing body function.—Christian.

For many years we have been holding this concept of human physiology and physiological therapy, and we are deeply thankful to see the widening of this light of fuller understanding, a fuller understanding that will equip the modern, serviceable physician to relieve the fatigued through means of physiological reestablishment—a return to physiological equilibrium, or normal functioning.

> The factor of safety in tissues, the power of repair and regeneration, and the effects of fatigue and rest, are portions of the functional concept of today which change our views as to treatment and give us a different opinion as to the possibility of improvement when adequate measures are applied to the body. Instead of therapeutic nihilism, there is the expectancy of good results from properly conceived and adequately carried out forms of therapeutics, in the sense that function is improved even though the anatomical change produced by disease is permanent.—Christian.

I should like to quote from one of my previous articles: Internal Secretions and Enzymes, Their Interrelation and Interdependence, Their Value and Application in Modern Therapy, read two years ago at a national medical meeting.

> We can now treat successfully disorders and diseases that we formerly, and even recently, called incurable. No physician with present day understanding allows a fatal prognosis to take possession of his thought, nor should he voice a fatal prognosis. He has seen the seemingly impossible become not only the possible but the logical and definitely certain. We now have a sufficient understanding of an applicable biological principle to apply it curatively in therapy. The dawn is appearing over the domain of biological phenomena, and we are beginning to understand their influences and to utilize them beneficently. The old idea of the futility of treating so-called incurable disease is rapidly giving place to definite and confident therapy based upon successful issues.

Fatigue, psychophysical weariness, is a current condition that should be scientifically recognized and met with physiological therapy, for it is this functional state (fatigue) that, left unrecognized and unaided, may glide by unperceived stages into a structural change with increased embarrassment of functioning. Physiological therapeutics, understood in the fuller and more complete aspect, is the efficacious treatment of fatigue—psychophysical exhaustion. Present day subefficiency, disinclination, is but an expression of endocrine asthenia,—tired functioning of the suprarenals and physiologically allied ductless glands.

From our viewpoint, the endocrinologist, who is seeing only type cases, and proclaiming only type cases, is an uninformed and dangerous therapist, as he sees only the obvious and treats the obvious, while we now know that the obvious is rarely, if ever, the primary or real disorder or disease.

We are quoting freely from modern authoritative research workers to reenforce our basic premise in modern therapy. That is, we must understand and apply revealed physiological laws to aid Nature in her functional and structural embarrassments; and fatigue—psychophysical weariness—is an early and warning phase of physiological disturbance: further, that the treatment of fatigue is the employment of associated gland substances which give promise of the greatest aid in the restoration of physiological balance, a restoration or normal physiological functioning.

Associated gland therapy is not the whole of adequate treatment of fatigue, but it is an essential part of physical treatment. A barrel whose bottom is out cannot be filled: and a fatigued man or woman cannot be successfully aided toward health who continues in the same environmental influences which produce fatigue.

> We begin now to draw larger inferences, to form dogmatic hypotheses, to harbor interpretative ideas. Observation and experimentation, hitherto our main tasks, are now temporarily stopped. We begin to think and make use of the creative imagination. With feet firmly fixed on a basis of facts observed, we try to pass by induction, or by deduction, to inference. We brood over the materials that we have selected and prepared, in the hope that things we have observed will lead us to ideas of this that cannot be observed.—Lewellys F. Barker, 1919.

We feel thankful for these interpretative utterances of men of inclusive vision. We have been groping and "stretching lame hands of faith" in the wilderness of phenomena, waiting patiently for the light of fuller understanding; and we now see the dawn of a rational therapy, based on a biological conception of man in which physics and chemistry are but categories of biological expression.

Let us return again, for emphasis, to the idea of association as the mode of physiological expression, and as the new and real guide to new or more efficient service in therapeutics.

> THE LAW OF ASSOCIATED PHENOMENA.
>
> One principle of supreme importance for the advance of medicine is the law of associated phenomena. This law is based on the fact that ill health is always accompanied by a number of symptoms, and in every case it is incumbent upon us to search for other symptoms besides those which are most prominent. When, for instance, we detect a structural symptom, we must recognize the limited knowledge it reveals, and we must extend our observations and seek for signs of functional derangement.
>
> Abelous and Langlois and Albauese have studied the relation of the suprarenal bodies to fatigue. . . . They infer that the muscular weakness following removal of the suprarenals is due to toxic substances of a similar nature to those producing physiological fatigue, and that the function of the suprarenals is to supply antitoxic substances. In view of our present knowledge of the physiological action of adrenaline (epinephrin) in its various forms, it seems more probable that the weakness is to be explained by the absence of the normal tone producing internal secretion of the bodies in question.—Sir James MacKenzie, 1919.

All present revelations, from thorough research, confirm the reason and necessity of administering associated glandular substances to aid Nature when she is fatigued or physiologically embarrassed, depending, through fuller understanding, on Nature's law of unerring proper selection—selecting from the associated gland substance administered the needed substances to restore normal functioning.

Health may be defined as the harmonious working of all the organs. As practical clinicians, let us endeavor to aid nature to resume harmonious working of all the organs; and this will be the most hopefully effected, so far as physical man is concerned, through the correct employment of physiological therapy—new therapy in the light of new physiology.

Fatigue is a symptom of exhaustion of the autoprotective mechanism—the glands constituting the internal secretions and enzyme chain; and the scientific and most satisfactory treatment of fatigue is associated internal secretions and enzymes, employed to activate, not stimulate, the inherent reactions.

To quote Kent again:

> The term fatigue is used . . . as a general term, and may be taken to include a general lowering of the functions of the body as a result of extreme or prolonged activity. From an industrial point of view it is less important to understand the deep lying causes than to be able to recognize and control the circumstances which have led up to them in the past and are likely to lead up to them in the future.

The prevention of fatigue is the correction of social and economic abnormality; but the therapy of fatigue—endocrine weariness—is the rôle of the physician of inclusive understanding in the administration of associated gland substances bearing internal secretions and enzymes. These are given as catalysts to activate resident reactions, not to stimulate or spur already jaded functions.

The physiological therapist has his rôle—a most important rôle—in social service; and to contribute serviceably he must see and understand the whole, the whole biologically, all that is interrelated and interdependent, that unity of structure and function which only the true biologist sees.

202 West 103d Street.

THYMIC DISEASE.

By Alvin E. Siegel, M. D.,
Philadelphia.

It is impossible, of course, to treat the subject of thymic disease adequately in a short paper. I shall of necessity, therefore, touch only upon the more salient features, and remind you that this condition exists more frequently than is generally supposed. In my own experience I have seen a number of cases, in the most of which the diagnosis was corroborated by x ray, and several have been improved by exposure to the x ray. One such case is reported here. In passing I wish to say that this is, I believe the best method of treatment. In the case reported the improvement seemed almost miraculous, when death appeared imminent. Other therapeutic measures are of little avail, and hypodermic medication and instrumentation should be avoided, even though there is apparently every indication for immediate treatment.

Our state of knowledge as regards the thymus gland is scant. Previously little had been known, and as a result the student of medicine was taught practically nothing about the anatomy, physiology and pathology of the gland. If the present textbooks are used in the search for information, the knowledge obtained will be of the haziest and most sketchy nature. Graham (1) presents by far the best consideration of the subject. He acknowledges his indebtedness to Coplin (2) for plates and texts which add considerably to the value of his article. Park and McClure (3) have recently added to the literature in a report of their work on the extirpation of the gland in dogs, and in addition have reviewed the experimental literature. Their removal of the gland is comparable to atrophy and disappearance of the gland.

As is well known the gland undergoes atrophy early in life. Some authors have associated marasmus, malnutrition, faulty assimilation, congenital lues, and chronic tuberculosis with atrophy of the gland as either a cause or an effect. While I concur in the belief that the atrophy of the gland is a physiological process, I do not believe that entire reduction of the glandular tissue is effected. Although it is not usually found macroscopically after the early years of life, it is surely present more or less as vestigial elements, and exerts a beneficent influence upon growth and metabolism. Indeed, the atrophic changes in the individual in extreme age may be due to the ultimate failure of the elements of this structure. Deficiency of thymic secretion or the absence of the gland may be important factors in metabolic and nutritional disorders. In the cases of hypertrophy or hypersecretion of the thymus which I have seen, the fact that the patients have all been well developed and well nourished, in spite sometimes of persistent difficulty in feeding on account of the interference with respiration, has strengthened the belief that any variation except diminished or absent secretion is beneficial to metabolism and growth. Conversely, absent or diminished secretion should be accompanied by incomplete metabolism and failure to develop.

Two pathological conditions of the thymus gland are described, namely, enlargement of the gland and status lymphaticus. These two terms should be used to indicate a difference of degree of involvement rather than two separate and distinct conditions, as status lymphaticus is thymic enlargement with hypersecretion and the additional involvement of other lymphoid tissue elsewhere in the body. The symptoms associated with it are usually more severe, and the prognosis is more unfavorable. The term thymic enlargement is a misnomer, and is misleading for the reason that it is not sufficiently broad to include the variations of the condition. In selecting the title for this paper I have used the term thymic disease, which accounts for hypertrophy or hyperplasia of the gland as well as for hypersecretion of the glandular elements or hypertoxicity of the secretion. With the addition of the involvement of lymphoid structures elsewhere in the body, the picture of status lymphaticus is presented. Therefore, by this term all phases of the pathology of the thymus gland are included. The pathology and symptomatology of these cases serve to illustrate what has been said before.

The first case was in an infant of three months, who was apparently healthy, well developed, and well nourished. It was under the care of a physician only for the purpose of having artificial feeding supervised. It was thriving on its formula, and had been seen by the pediatrist only a few days prior to this trouble. On awakening one morning the nurse noticed that the baby was having considerable difficulty with its respiration. The breathing was shallow, embarrassed, rapid, and noisy. It took its bottle poorly. After a few hours the condition became worse, and there was then present cyanosis and an imperceptible radial pulse. The infant was hurried to a physician in the neighborhood, and a few drops of brandy were given, after which the condition reverted to the former state of embarrassed, rapid, shallow, noisy breathing. Later in the day the regular attendant paid a visit, and the only variations from normal noted at this time were the symptoms just enumerated, with some slight cyanosis. There was in addition a lack of interest in the surroundings, and especially in its bottle, which was decidedly contrary to the rule.

In the evening another exacerbation developed. The regular attendant was called, but being unable to respond, I was asked by him to see the patient. Before my arrival brandy had been administered again with a beneficial result, so that during my visit nothing was to be seen except the slight cyanosis, rapid, shallow, noisy breathing, and some difficulty in accomplishing this function. The temperature was normal. Nothing could be seen in the throat. The lungs were resonant throughout, and except for the short, rapid and noisy breathing auscultation revealed nothing. Percussion of the cardiac area of dullness showed a continuation of the area to the right in the second and third interspaces to about two and a half cm. to the right of the sternal border. There was, however, no marked increase in the entire area of dullness. No murmurs were heard. Tachycardia was present. Further examination revealed nothing abnormal. As at this time there seemed no urgent indication for therapeusis, nothing was ordered, but a request was left for the regular attendant to visit the patient at his earliest opportunity. He called about midnight and found the baby in another exacerbation of the condition. Hypodermic stimulation was given, and after a few moments it was noticed that breathing had ceased entirely.

The clinical picture, with the manner of death, was so suggestive of thymic death that this diagnosis was filed for the death certificate, and permission was asked for an autopsy. The father being at a distant point of the country, the body was held for several days until his return, when permission for a limited autopsy was given. I made this examination and found the lungs filled with air and apparently not compressed, nor was there any evidence of pressure on the trachea, bronchi, or great vessels. The anterior mediastinum was completely filled by the gland and the edges of the lungs and a part of the heart were overlapped by it. The heart, examined *in situ*, was apparently normal. The abdominal viscera, also examined *in situ*, were all normal, and nowhere was there found any evidence of hypertrophy of lymphoid tissue. The specimen removed was a thymus gland of the trilobar, cervicothoracic type. The body of the gland was divided almost equally into two lobes. The elongated third or cervical lobe lay in the suprasternal notch, but there was here also no evidence of pressure. The gland was twelve cm. at its greatest length and eight cm. at its greatest width. The weight was 22.5 grams. A microscopic examination of a section of the gland showed a more or less lobulated appearance and lymphoid hyperplasia. There was no sharp line of demarcation between the cortex and medulla. The thymic corpuscles or corpuscles of Hassall were rather numerous, the majority showing peripheral keratization, and a few appeared vacuolated. The bloodvessels appeared distended and congested.

The average normal thymus becomes undemonstrable by the second year. Its demonstration in its normal condition is possible under the most careful physical examination. This specimen may not be considered enlarged, as the child was only three months old, although involution was certainly not progressive for its age. The gland was greatly over weight, however. As stated above, there was no evidence of pressure, although the anterior mediastinum was completely filled by the gland. Even if some allowance is made for edema of the gland to have been relieved between the time of death and autopsy, the evidence of severe respiratory embarrassment still remains in part unexplained. The symptomatology was respiratory with secondary cardiac features. As no other abnormality could be found, the reasonably certain conclusion remains that here there was perhaps slight intrathoracic pressure, but that the major part of the difficulty in respiration was caused by a selective depressant effect of hypersecretion of the glandular element or hypertoxicity of the secretion upon cerebral respiratory centres.

The other case was in a child of nine weeks who was brought to the hospital suffering from extreme respiratory difficulty. The mother stated that the baby had always had more or less difficulty with breathing, but that this had become progressively worse. On admission the respiratory rate was 95 a minute. It was attended with a great effort on the part of the infant, and there was suprasternal indrawing and retraction of the interspaces. On examination it was noted that the child was well nourished, and slightly cyanotic. Percussion of the chest showed no dullness. On the right there was hyperresonance; on the left, auscultation revealed little. On the right there was apparently no air entering the lung. Examination of the heart, abdomen, and the extremities, revealed no abnormalities. On the day after admission an x ray was taken. This showed that the right lung was not distended, but was compressed toward the hilum. The thymic shadow was increased in size. From the symptomatology and the x ray findings, a diagnosis of thymic disease was made. The condition of the baby became much worse during the seventy-two hour period after admission, until it seemed impossible for it to survive. The respiratory difficulty was extreme; the child was very cyanotic. It was given nourishment and stimulation by mouth and by rectum, and the body heat was maintained by the use of hot water bottles. The bed was placed at a window and oxygen was given. Gradually its condition improved. Two days after the first x ray it was exposed again, and another radiograph was made. This showed some diminution of the thymic shadow as compared to the first plate, and partial distention of the right lung. After this treatment the breathing became progressively better. Four weeks later a final treatment was given. At that time the thymic shadow was greatly diminished, being perhaps the normal for a child of this age. The lung had expanded, and the respiratory embarrassment had disappeared. He was seen for several more weekly visits in the clinic and had no further difficulty.

CONCLUSIONS.

From observation of these two cases and of others not reported here, and from gleanings from the literature, I believe that the following conclusions are warranted:

1. Thymic disease is more frequent than is generally supposed.
2. There may be some influence on metabolism and growth from too early or too complete atrophy of the gland.
3. Thymic disease and status lymphaticus are closely allied, and differ principally in the extent of the involvement.
4. Thymic enlargement may be a misnomer because the symptoms may arise with little or no enlargement. While there may be hypertrophy or hyperplasia, difficulty seems to be caused more by hypersecretion or by hypertoxicity of the secretion.
5. The thymic secretion exerts a selective depressant influence on cerebral respiratory centres.
6. Exposure to the x ray is the best method of treatment. Hypodermic medication and instrumentation of any sort should be avoided.

I wish to express my indebtedness to Dr. Thompson S. Westcott for the privilege of material from his ward, to Dr. M. F. Percival for x ray studies, and to Dr. E. J. Asnis for the report of the histological study of the section of thymus gland.

REFERENCES.

1. GRAHAM, E. E.: *Diseases of Children.*

2. COPLIN, W. M. L.: *Morphology of the Human Thymus,* Publications from the Jefferson Medical College and Hospital, Philadelphia, vol. vi, 1915.

3. PARK and MCCLURE: Results of Thymus Extirpation in the Dog and Review of Experimental Literature, *American Journal of Diseases of Children,* November, 1919.

313 SOUTH EIGHTEENTH STREET.

ADDISON'S DISEASE.

Report of an Unusual Case.

BY JOSEPH EIDELSBERG, M. D.,
New York.

Since few cases of this rare condition have been reported recently, the presentation of this unusual example of Addison's disease is warranted. A number of distinct variations from the classical picture will be observed, as well as several marked classical features, while the necropsy report definitely establishes the diagnosis.

CASE.—D. M., aged thirty years, white, male, was admitted to the medical wards of the Post-Graduate Hospital, complaining of abdominal pain, vomiting, and weakness of ten days' duration.

Family history.—Father and mother, when last heard of, were alive and well. He had five sisters and five brothers, alive and well. There was no history of tuberculosis, lues, or diabetes, in the family.

Personal history.—The patient had no knowledge of any childhood diseases. Twelve years ago a sore appeared above the symphysis, which discharged pus for three months and then healed. Three years ago the right side of the scrotum became swollen, discharged for several months, and then healed at the end of the sixth month.

Past medical history.—He had had no headaches, no dizziness, no trouble with his eyes, ears, or nose. The teeth were always well taken care of.

Cardiorespiratory systems.—He had had no cardiac pain, but had suffered from palpitation and dyspnea on exertion. There was no cough or hemoptysis.

Gastrointestinal system.—He had been constipated for the past five years. He had felt a pressure in the abdomen, about two or three times a week, coming on about one hour after meals. It was situated about the umbilicus, and had no definite radiation; it would continue for two or three hours, or more, and would disappear with a bowel movement (produced by an enema or cathartic). During all this time he had vomited only once or twice.

Genitourinary system.—He had had gonorrhea ten years ago; lues denied. For the past three years he had had nocturia occasionally.

Weight.—Three years ago he weighed 150 pounds; present weight, 130 pounds.

Geographical.—He was born and lived in Rumania up to five years ago. Since coming to America (five years ago) he lived in Florida, up to two weeks ago.

Present illness.—This illness began suddenly ten days ago with: Loss of appetite, weakness, vomiting immediately after each meal, constant pain in the abdomen about the umbilicus, marked constipation, dizziness, and fainting sensation on slightest exertion. These symptoms continued throughout the whole ten days, increasing in severity.

Physical examination.—General appearance: An adult male, who appeared weak and prostrated.

Head: No tender area. Hair tinged with grey; eyes, ears, and nose, negative.

Mouth: Teeth, several crowned, others in good condition. Several pale brown patches in buccal membrane.

Neck: Negative.

Chest: Lungs, negative; heart rate, ninety-five a minute, otherwise negative.

Abdomen: Held rigid; no tender points. Liver, kidneys and spleen not palpable. Scar one inch in diameter, one inch above the symphysis.

Extremities: No edema; no deformities.

Reflexes: Normal.

Skin: Patient appeared "tanned" (as though due to exposure to sun). Scattered over his body there were about fifteen small, pale scars.

Genitalia: Penis very small. Right side of scrotum showed a small depressed scar attached to deeper structures. Right epididymis large and thickened.

Laboratory findings.—Urine, negative; Wassermann, negative; phenolsulphonephthalein test, thirty-five per cent. elimination in two hours; feces examination, normal.

Blood count.—Red blood cells, 5,600,000; white blood cells, 10,800; polymorphonuclears, seventy-two per cent.; lymphocytes, twenty per cent.; eosinophiles, two per cent.; transitionals, two per cent.; large mononuclears, four per cent.

Gastric contents.—

	Retention Meal	*Ewald Meal*
Volume	20 c.c.	35 c.c.
Free hydrochloric acid	0	0
Combined hydrochloric acid	q.n.s.	q.n.s.
Total acidity	14	20
Lactic acid	0	0

The microscopic examination revealed no red blood cells; few leucocytes; few bacteria; no yeasts. Chemical tests for blood were negative.

Temperature.—Varied between 97.6° or 98° in the morning to 100° or 101° in the afternoon.

Pulse.—Varied between 80 and 110 a minute.

Respiration.—Varied between 20 and 25 a minute.

Blood pressure.—Systolic, 70 to 80 mm. Hg.; diastolic, 50 to 60 mm. Hg.

Von Pirquet test.—Very markedly positive.

Course.—The weakness rapidly increased until patient could not turn in bed. The vomiting grew worse, and no food was retained. On the evening of the sixth day after admission to the hospital, the patient suddenly became unconscious, cyanosed, his pulse became imperceptible, and in five minutes ceased to breathe.

A permit for a partial autopsy was obtained, and the findings were as follows:

Lungs.—No signs of pulmonary tuberculosis.

Heart.—Except being slightly undersized, the heart was negative.

Liver.—This organ was negative, except for slight congestion.

Spleen.—Entirely negative.

Kidneys.—A slight hyperemia and cloudy swelling were found, but otherwise negative.

Adrenals.—Both suprarenal bodies were markedly enlarged and soft, and on cutting, except for a thin cortical portion, appeared to consist of a soft cheesy material. Microscopically several areas so typical of tuberculous lesions were found.

COMMENT.

Although the patient may have been suffering from Addison's disease for a long time, still the true typical clinical picture had a duration of only sixteen days with a rather sudden onset. The predominant features of the syndrome first pointed out by Addison in 1855, "asthenia, irritability of the stomach, and change of color in the skin," were present, together with a remarkably low blood pressure, but the bronzing of the skin was only represented by the generalized "tan" and only a suggestion of buccal membrane pigmentation existed. In his original monograph, Addison included anemia in the description, which was here absent. Also, one is struck by the absence of any signs of pulmonary tuberculosis, although the patient probably had suffered from tuberculous epididymitis, while the suprapubic fistula had also probably been of a tuberculous nature. The gastric irritability could hardly have been entirely explained by the hypochlorhydria—although this element was not a mere coincident in this case, as it was found in all our other cases (which unfortunately did not come to autopsy).

Osler pointed out, that "the cases in which the bronzing is slight or does not occur, run a more rapid course," and also describes the socalled acute cases, in which group this case may be classed. The extensive tuberculosis of both suprarenal bodies definitely establishes the diagnosis, in spite of the other apparent irregularities.

240 West Seventy-fifth Street.

A Deficiency in Heat Treated Milks.—Amy L. Daniels and Rosemary Loughlin (*Journal of Biological Chemistry,* November, 1920) found that in the process of long heating the calcium salts of the milk were rendered more or less insoluble, depending on the length of time the milk was treated. In this insoluble form they may be lost, as some of the precipitated material may adhere to the container, and some, for example evaporated milk, may separate out on standing. When particular care was taken to include the insoluble material by colloidal suspension, results comparable to those with raw and quickly boiled milk were obtained. No data were secured to show that the heat treatment affects the fat soluble or water soluble vitamines in milk, nor the casein.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, FEBRUARY 12, 1921.

THE DIAGNOSIS OF MALIGNANT TUMORS OF THE HEART.

The diagnosis of a malignant and neoplastic process of the heart is difficult and in most cases impossible, even at autopsy. The symptoms presented by the patient will generally be attributed to the primary or secondary cancerous process developed in some other viscus. It is clear that in a subject with carcinoma of the liver, for example, the symptoms which successively develop will be attributed to the hepatic neoplasm, and that malignant involvement of the heart will not occur to the mind of the physician unless he is aware that this contingency may arise. Should an embolus start from the malignant tumor of the heart, and, for example, reach the brain, a paralysis naturally ensues, yet here, too, a diagnosis of cerebral embolus will be made as the result of some form of endocarditis and cancer of the heart will not occur to the mind of the examiner. In most instances the primary malignant growth will be accused of being the starting point of the embolus.

Cancer of the heart may also be easily confounded with all cardiac affections which give rise to murmurs, circulatory disturbances and general symptoms, such as dyspnea, palpitation, and angina pectoris, and even should cardiac cancer be suspected, it will be eliminated from the diagnosis on account of its extreme infrequency. Finally, should the cancerous growth of the heart compress the various organs contained in the mediastinum the diagnosis of enlarged mediastinal lymph nodes is likely to be made, while even radioscopy will throw little light on the diagnosis. In the presence of malignant processes of the kidney, liver, or any other viscus for that matter, presenting cardiac symptoms which cannot be attributed to some other infection prior to the development of the cancer, or to some disease which has passed without leaving any sequel, the possibility of a malignant neoplasm of the heart should be considered.

There are no signs of sufficient import which can lead with certainty to the diagnosis of cancer of the heart. A malignant cardiac neoplasm may have given rise to certain peculiar symptoms that have been overlooked or have been attributed to the primary growth in another viscus, but if the physician is on the lookout certain slight cardiac symptoms may draw his attention to the heart and at least a suspicion of the real condition of affairs may be awakened. A poor condition of the general health, a progressive emaciation that nothing seems to explain, some few slight disturbances of the cardiac circulation, an increase in the area of cardiac dullness, or a precardial projection might make the medical man think of primary cardiac cancer. The diagnosis will become more likely—although it cannot be made with certainty — should symptoms of angina pectoris or pericarditis exist. If the latter lesion be hemorrhagic in nature, this will be yet another reason to suspect cancer of the heart with extension to the pleura, because the extreme infrequency of primary cancer of the latter process would be in favor of a cardiac neoplasm. However it may be, the prognosis is of course fatal and after a variable lapse of time death occurs from cachexia, embolus, rupture of the heart or a systolia with the usually well known symptoms of this affection.

THE PRESENT POSITION OF MIDWIFERY IN GREAT BRITAIN.

All those who are conversant with the manner in which midwifery is conducted in Great Britain appear to be agreed that great reforms are urgently called for. A campaign is being launched by the most prominent exponents of the obstetric art to improve conditions in this respect. It is pointed out by these men that a wrong conception of obstetrics exists, and that it is taught to the medical student in a somewhat careless and perfunctory manner. The proper conduct of midwifery is of the first importance in every civilized country, and while midwifery, on the whole, is more thoroughly and carefully carried out in this country, a consideration of the situation in Great Britain will doubtless be of interest to our readers.

At a meeting of the Norwich Medico-Chirurgical Society, held at the Norfolk and Norwich Hospital on October 12, 1920, Mr. Victor Bonney, an authority on obstetrics, both from the teaching and practical viewpoints, gave the annual address. He stated that the artificial separation of obstetrics from medicine and surgery was extremely harmful. Obstetrics had been made into a sort of close borough, and medical students became imbued with the idea that it was essentially different from other branches of the profession. The gist of Mr. Bonney's strictures were that the main reason why such unsatisfactory views held sway was because the public gave little thought to childbirth, or to the man who conducted it. It was regarded as relatively unskilled work, and people in general failed to realize that childbirth was a process carried on for the benefit of the race at the expense of the individual. The public took its tone from the doctors, who derived theirs from the students, and they in their turn from the teachers. The teachers of midwifery were fundamentally responsible for the present state of affairs. Obstetrics ought to be looked upon as a branch of surgery, as it was in its essence mechanical, and had to be treated by operation and not by drugs. He insisted that in the present state of knowledge there was no specific treatment of abnormal pregnancy beyond the mechanical removal. For these reasons he advocated the conception of midwifery as a pure surgical art.

The speaker pointed out that in the conduct of labor as a surgical operation there were three imperative conditions: 1, suitable environment; 2, an independent anesthetist; 3, adequate assistance. He declared that in order to carry out operative midwifery properly four people were required: the operator, the anesthetist, and two nurses.

While conditions in this country generally, with regard to the conduct of obstetrics, if not the teaching, are superior to those which prevail in Great Britain, it cannot be denied that there is considerable room for improvement. In the large cities there is perhaps adequate accommodation in well equipped institutions for lying in women. It seems that such facilities are as a rule lacking in Great Britain. But, with regard to the proper obstetrical treatment of the poor and of those who cannot afford to pay large amounts, the situation in this country is, perhaps, no better than that in other civilized countries, and as the majority who need skilled assistance are financially so placed as to be unable to obtain it, the problem is similar everywhere. The problem can only be successfully solved—that is, if the argument that a midwifery case is a surgical case and requires skilled and adequate aid is true, and no doubt it is true—by the establishment of lying in institutions in all parts of the country in which, for a payment according to means, a lying in woman can receive skilled and proper services during and after her confinement. It is a question on which the future of the race, to some extent, depends, and is worthy of the close attention of the medical profession.

PHYSICIAN AUTHORS: DR. MAX NORDAU.

One of the most romantic and important outgrowths of the World War has been the steps taken toward establishment of a homeland for the Jews, under British guardianship, on the ancient Hebraic soil of Palestine. These steps are the result of the Zionist movement started in 1897 by Theodor Herzl, the Viennese playwright and journalist. Herzl's chief associate and supporter in this movement was Dr. Max Simon Nordau, the well known physician, philosopher and sociologist of Paris. Nordau responded quickly and urgently to Herzl's Zionist idea, and together he and Herzl came to be looked upon as the natural leaders of the movement. Together they brought about the first Zionist congress at Basle, Switzerland, in 1897, at which Herzl was elected president and Nordau first vice-president. When Herzl died in 1904 Nordau stood alone as the spiritual head of the movement and in the following year, at the seventh Zionist congress (again at Basle), he was the unanimous choice for president. He has been the most important figure in the movement ever since.

Although Dr. Nordau is best known as a pathological critic of literature, art and morals, he also has written four novels, one volume of short stories, five plays, and several volumes of essays treating of arts, artists, historical subjects and various Jewish questions. There also is one volume of fairy stories, *The Dwarf's Spectacles and Other Fairy Stories,* published in 1905. The novels are: *The Malady of the Century,* published in 1889; *The Comedy of Sentiment,* 1895; *The Drones Must Die,* 1897, and *Morganatic,* 1905. But it is his writings in the field of polemics, rather than his fiction and plays, that have given him his wide reputation throughout the world. His literary reputation in continental Europe began with *Conventional Lies of Our Civilization,* a bold attack on the ethics of modern civilization in general, with particular treatment of the religious, governmental, economic and social phases of this question. It is pessimistic in tone, as is also his *Paradoxes,* which followed it. The third of his sociological works was *Degeneration.* It is on this volume that his reputation in the United States and

England chiefly rests. In *Degeneration* Nordau makes out a strong case for decency in literature and art. Many critics have argued that his position is a bit too prudish. The book is dedicated to Cæsare Lombroso, and has for its theme the relation between genius and degeneracy. It is Nordau's contention that if a given piece of work is immoral and gross, the man or woman who produced the work is corrupt and degenerate, and cannot be excused on the ground of genius. Further, the work itself is worse than valueless. Ethical utility is the chief consideration, he argues, and if a work is wholly devoid of that its influence in the opposite direction proves its unfitness.

The three volumes have been translated into a score or more of languages, and now that he has rounded out his threescore years and ten, Nordau is writing what he calls the last chapter of his life's message in *The Essence of Civilization*. He is back again in Paris, after having spent three or four years in Madrid, Spain, as a result of the war, for although the house of Hapsburg had no love for him, nor he for the house of Hapsburg, he was still a subject of Austria-Hungary when the war broke out and as such was forced to leave France. When he returned to Paris the housing crisis crowded his household effects into a modest five room flat on the top floor of a nonelevator apartment house, in Rue Henner, on the outskirts of the Montmartre district.

It is there that Nordau is writing *The Essence of Civilization*. As in the case of his other polemical writings, it will be pessimistic—if we are to believe those who have quoted him on what he is going to say in it. He points out that the fruits of present day civilization are discontent, failure and hopes deferred, that while man's desires increase by multiplication, his means of satisfying them scarcely grow by addition. He advocates the single standard for nations as well as for individuals and expresses the belief that there will be no moral advance until morals mean the same things for nations as they do for individuals. He believes that the way to salvation lies in stimulating the healthy tendencies of the age, and believes that in the course of time popular education will be of vast help toward a general leveling upward. Asked whether he thought the world today was entering upon a new era of development, he said: "That is the eternal delusion of man, that his particular day is particularly important. There have been great wars in the past. There will be great wars in the future—unless the League of Nations should prove to be the germ of something new and great. That is the only significant hope I see today, and it is thus far a faint one. America through President Wilson was largely responsible for that hope. But America seems to have repudiated that hope. Whether that is fatal—" He shrugged expressively.

Nordau was born in Budapest on July 29, 1849. He received his elementary education, including that of Latin, Greek and Hebrew, from his father in Budapest. Later he attended the university there and devoted himself to the study of medicine, while as a student he took up those literary and historical studies which have had such a great influence upon his career. Upon completing his medical course he passed his state examination and then went to Vienna to discharge his conscription duties as a military surgeon, spending six months in travel, during which time he visited Russia, Scandinavia, England, Ireland, France, Germany, Italy and Spain. He returned to Budapest in 1878 and after practising medicine there for two years, went to Paris and settled there permanently as a physician. From 1880 to 1882 he supplemented his Budapest medical education with postgraduate studies in Paris, and since that time has divided his time between his profession and literary work.

MEDICAL RELIEF IN RUSSIA.

The Institution of the People's Commissariat of Health has had an uphill fight. First came the cholera in 1918, but, owing to energetic work, the cases were 35,619 as against more than 200,000 in 1908. In the autumn came influenza, and, after this, typhus, whose eight months ravaging affected 1,299,263 people, eight to ten per cent. dying. Obligatory vaccination was one of the weapons used to fight the small pox in 1919, but 81,851 cases were registered. The entire medical services have been reorganized. They are united into a single institution on the plan advocated by the French hygienist Mirman in 1913. A great deal of the success gained has been the assistance received in the daily work of the commissariat by the people themselves. There is the workers committee to combat epidemics, and these aid the medical board in every city, looking to the supply of soap, cleanliness of lodgings, hotels, jails and conveying correct information and hygiene. The organization of sanitary protection for workers is carried out by special inspectors selected from the workers themselves who also share in the inspection of dwellings. A great deal of work has been done in fighting tuberculosis and venereal disease. The estates of the nobles have been taken over, and in 1919 there were seventeen summer sanatoriums with 876 beds; fifty-four permanent ones taking in 4,750 cases; five infirmaries for the tuberculous.

The report of the All-Russian Conference of

Health Boards shows ample provision being made for epidemics. There are 250,000 beds for soldiers alone, and four large physicomechanical therapeutic organizations. No fee is taken at any hospital. The drug stores are nationalized and ambulatories deliver medicaments free of charge. There is a free dental ambulatory in each capital, 1,500 dental surgeons have been mobilized. All health resorts are under the direction of the Commissariat. Once enjoyed only by the rich, they now afford State treatment, board and lodging for the needy: thus far, they control some 143,000 beds.

Under the Czar, every inhabitant paid about a rouble in health taxation. Of this, ninety-five kopeks went for general treatment, five for sanitary prophylaxis. Now, more than sixty per cent. of the appropriation is spent for the latter. The protection of motherhood and infancy by the establishment of milk centres and day nurseries is forging ahead. But the great point is that the cooperation of the people themselves is urged and, as far as one can judge, not asked in vain.

TORONTO ACADEMY OF MEDICINE

At the present time there are 551 resident Fellows of the Toronto Academy of Medicine and fifty non-resident Fellows. With an estimated population of 550,000, there are probably between eight hundred and one thousand physicians in Toronto. During war time and since, the number of physicians easily increased three hundred or four hundred. When the annual flood of new physicians is let loose within the next five years, there will likely be three hundred more. The congestion of the medical population is evidenced by recent adaptations in order to fit in with what prevails in Toronto, as in other centres, namely, the scarcity of houses. Nowadays, it is quite common to see a house which formerly harbored a leading physician or surgeon, transformed into suites of offices and as many as ten to a dozen brass plates shining merrily in the sun's rays. That there should be so many physicians in Toronto who stand aloof from the Academy of Medicine—for there must be a good four hundred—seems a remarkable instance of a lack of something especially when the annual reports are scanned and the progress noted. Almost any afternoon physicians may be found perusing the current medical periodicals, and to see the well supplied library tables one would not fancy that the high cost of paper and printing had made much difference in the output of medical literature.

During the past year the Academy has been able to accomplish a record of the annual transactions of the society, largely through the efforts of a publication committee working under the able guidance of the late Dr. Herbert J. Hamilton, a past president of the Academy. Many members have been most generous in the matter of gifts of books and odd volumes; so with this ever increasing generosity and faithful work of officers and others the Toronto Academy of Medicine takes an important position in the medical life of Ontario. The assets of the Academy now amount to more than sixty thousand dollars and there are no liabilities. There are more than ten thousand accessioned volumes in the Library. Though the many advantages of being a member of the Academy have not yet appealed to a number of practitioners in Toronto, progress is being steadily made toward admitting new arrivals, so that it is hoped soon to encompass the Toronto profession into a well organized local body.

ONE SQUARE MEAL.

The poor are always unreasonable: they succumb so quickly in epidemics; they make a point of getting run over or tumbling off scaffolds or rushing premature babies into the world without any regard to overcrowded wards. Consequently, they are turned out as soon as possible to make room for others. They go home to small, stuffy rooms, and when the first pleasure of returning is over, the tired feeling comes and the want of appetite for the ill cooked or carelessly served food. It is to meet this craving that the Invalid Kitchens of London have been instituted with the ubiquitous Queen Mary for president. Nursing mothers are also included as guests to this one square meal a day, which is rich in vitamines, well cooked, and can be taken home or eaten in pleasant surroundings. It is wisely thought that this will be a substantial factor in forwarding the work of the district nurse and promoting a radical cure.

AN IDEAL HEALTH CENTRE.

An announcement appeared on one of the New York churches that services were held throughout the summer because the devil took no vacation, but, apparently, he omitted Norfolk, Virginia, from his calling list last season, and a heaven sent idea was conceived and fostered by Dr. P. S. Schenck, its director of public health, in his absence.

It looks very pretty on paper. The colonial domestic style has been adopted by the architect for this Health Centre, and the court house will be the old academy remodeled to meet the needs of the Juvenile Court and the Court of Domestic Relations. There is a detention house, a large emergency hospital, a prematernity building where prenatal work and also the pediatric work for any children up to those of school age will be carried on. The administrative building includes the laboratories and offices of the central board. The general medical building houses all the clinics and is the centre of active dispensary work. The psychiatric clinic is in the basement of the court house, the x ray in that of the general medical building, where, after the custom of Bridgeport, Conn., work will be done for private physicians. There are large examination rooms, a cystoscopic room, and a tuberculosis section. The prematernity does not need any twilight sleep, for the sight of the pleasant cottagelike building with its children's playrooms, reassures the expectant mother. The court house, in its close association with the medical side, suggests that sin is also a disease, something evictable from the human system. The buildings, when finished, will suggest a real fight against the many evils in the city, and give people an idea of the seriousness with which men who know regard such blots on the fair name of the city.

THE LEAGUE OF REMEMBRANCE.

The very best way to absorb the fast growing discontent and the bitter feeling that the wounded soldiers are forgotten, is to join one of the many leagues formed for remembrance. The value of fresh books in a hospital is incalculable. The book accommodation is not large, and nurses are obliged to make an occasional clearance of the old and tattered magazines. The requests to the English League of Remembrance are odd. One soldier at Assowan wrote, through his nurse, for an old A. B. C. Railway Guide, his only solace being to work out the return fare to all the places he wanted to go to. Many men like easy Science Primers. They seem to feel the satisfaction of wrestling, if only mentally, with something not understood. Appeals come from all parts, and those who know the dreariness of a long convalescence should quickly respond.

◆

Obituary.

JOHN FREEMAN KNOTT, M. D., F. R. C. S. I., M. R. I. A., of Dublin.

Dr. John Knott died at his home in Dublin on Sunday, January 2d, at the age of sixty-eight years. He received his professional education at the Royal College of Surgeons in Dublin, being licensed in 1877. He subsequently traveled in Germany, Italy, Poland, and Russia, and, returning to Dublin, devoted himself to teaching. While working as a teacher of surgery he obtained the fellowship of his college in 1880 and the membership of the Royal College of Physicians in 1882. Later he took the University Degrees in Medicine and Surgery at Trinity College.

Dr. Knott was a man of wide and varied reading, and had a very intimate knowledge of European literature. The byways of medical literature specially interested him, and he was well acquainted with ancient and medieval medicine. Modern progress had little interest for him; in fact, he scarcely believed in its reality. In his writings, which, if collected, would fill many volumes, he drew on an apparently inexhaustible fund of curious and interesting knowledge. Some years ago he was a frequent contributor to the New York Medical Journal.

News Items.

Sleeping Sickness in Boston.—Two more deaths from sleeping sickness have been reported in Boston, bringing up the total in Boston and vicinity to eight. Twelve additional cases have been reported.

Child Welfare Congress.—The Second International Child Welfare Congress will be held in Brussels, July 18 to 21, 1921. M. Henri Velge, 27 rue de Turin, Brussels, is secretary general of the congress.

New Bikur-Cholim Hospital Planned.—Plans are being prepared for a new building for the Bikur-Cholim Hospital at 601 Willoughby Avenue, Brooklyn. The new hospital will be of the most modern type, and will contain more than four hundred beds. The estimated cost of the structure is $350,000.

Sleeping Sickness in Sweden.—It is reported that sleeping sickness is increasing in Sweden. Twenty-two deaths have occurred from the disease and new cases are being reported from country districts every day. The health authorities have ordered that the strictest precautions be enforced.

Sleeping Sickness Increasing in London.—According to cable dispatches, dated January 31st, fifty-five cases of sleeping sickness were reported in London during the preceding four weeks. This is a large increase, only twenty-three cases having been reported during the previous period of four weeks.

American Medical Unit Reaches Warsaw.—Dispatches from Warsaw, dated February 6th, state that the medical unit of fourteen American Jewish doctors sent out by the Joint Distribution Committee for American Jewish Relief, have arrived in Warsaw, headed by Dr. Harry Plotz. Dr. Boris Bogen, one of the committee's head workers, accompanied them from Paris.

Health Department Making a Housing Survey of New York.—During the past week the Department of Health of the City of New York has been making a survey of the city to ascertain how many persons should be dispossessed, in order to enforce the health regulations and the sanitary code. Health department figures show that between March, 1920, and January 1, 1921, overcrowding increased seven per cent. Of the 130,000 babies born in New York last year, 100,000 were born in crowded tenements.

French Physician Presents Report on Tuberculosis Cure.—Professor D'Arsonval has presented a second report to the French Academy of Sciences on the curative treatment of tuberculosis by a method discovered by the Swiss bacteriologist, Henry Spahlinger. The method was first applied in 1913 and 1914 in hospitals in England, France and Switzerland in the cases of patients suffering both from the minor forms of tuberculosis and advanced phthisis. Since that time those patients who were pronounced cured have been kept under observation. All of them are declared to be alive and in good health, and they have shown no symptoms of a relapse for the last six years, although they have undergone no further treatment. These results have been vouched for, among others, by Dr. Leonard L. B. Williams, of London.

Increased Appropriation for Hospitals for War Veterans.—The annual sundry civil bill, which was reported to the Senate on February 4th, contained an appropriation of $17,500,000 for increased hospital facilities for war veterans, including $12,000,000 for five new buildings. The bill proposes $5,000,000 for enlarging present hospital facilities at Boston, New York, Chicago, Louisville, Perryville, Md., and Whipple Barracks, Ariz.

Pennsylvania Laws Relating to Insane and Feebleminded to Be Revised.—The commission recently appointed to revise and codify the Pennsylvania State laws relating to the insane and feebleminded is preparing a report to be presented to the Legislature now in session. It is anxious to hear from physicians, who have suggestions to make relating to the question of commitments or discharges, to the general policy of State care, to the advisability of an independent administrative board or commission, or to any matters that have to do with the care of the insane and feebleminded, epileptics and inebriates. All communication should be addressed to Dr. Charles H. Frazier, secretary, 1724 Spruce Street, Philadelphia.

A Course in Clinical Ophthalmology at the Hôtel Dieu.—The Faculty of Medicine of Paris has arranged a course in ophthalmology to be given at the Hôtel Dieu by Professor F. de Lapersonne, assisted by Associate Professors Terrein and Guillemont, Dr. Hautant, otorhinologist to the hospital, and Dr. Velter, Dr. Prelat, and Dr. Monbrun, chiefs of the clinic and the laboratory. This course will begin on May 10, 1921, and will be continued every day through the months of May and June. It will consist of clinical examinations, practical work in operative medicine, and laboratory demonstrations. A special certificate of the Faculty of Medicine of Paris will be given at the end of the course. Physicians and students, both French and foreign, who desire to take this course must register their names with the secretary of the faculty. The number of members has been limited to forty, and the fees have been fixed at 150 francs.

Western Electrotherapeutic Association.—The third annual meeting of this association will be held in the Little Theatre, Kansas City, Mo., on April 21st and 22d, under the presidency of Dr. B. B. Grover, of Colorado Springs, Colo. The annual dinner will be given at the City Club on Thursday evening, and a number of distinguished speakers will be present, including Surgeon General Hugh S. Cumming, United States Public Health Service; Dr. A. J. Pacini, chief of the X Ray Division of the Public Health Service; Dr. H. Bowing, of the Mayo Clinic, Rochester, Minn.; Dr. A. F. Tyler, of Omaha, Neb.; Dr. William Benham Snow, of New York; Dr. Frederick Morse, of Boston; Dr. Curran Pope, of Louisville, Ky.; Dr. T. Howard Plank, of Chicago. Clinics and demonstrations will be held every afternoon and there will be an excellent commercial exhibit. A three day session of the Western School of Electrotherapy will precede this meeting, beginning April 18th. For further information and programs address the secretary of the Western Electrotherapeutic Association, Dr. Charles Wood Fassett, 115 East Thirty-first Street, Kansas City, Mo.

Industrial Accidents in Pennsylvania.—Records compiled in the Bureau of Workmen's Compensation of the Department of Labor and Industry, show that there were fewer accidents reported in the state during 1919 than in any other subsequent to 1915. Out of 152,544 accidents last year, 57,105 were of such a nature that compensation was paid to the various injured persons or their dependents, amounting to $10,982,836. The fatal accidents numbered 2,569. Serious accidents numbered 38,942. The number of days lost through accidents is estimated at 2,053,277. During the same period 668 boys and 100 girls under sixteen years of age were injured. Injuries to women showed that twenty-one were fatal; 821 serious and 3,042 slight, resulting in disability for a period of less than fifteen days. The total wage loss through accidents was stated at $8,756,697. The average loss in wages for each accident was $57.47.

Typhus Fever in New York.—A cabin passenger from the steamship *Presidente Wilson,* which arrived in New York about ten days ago, is in the Willard Parker Hospital, where his case has been diagnosed by the health authorities as typhus fever. Four suspected cases were also found among the steerage passengers. A report on the typhus situation in New York has been made to Commissioner of Health Copeland, and the latter has ordered that a followup be made of every passenger who landed from the *Presidente Wilson* before it was discovered that there were cases of the disease on board. Other cities have been notified, so that if any of those who arrived have gone to other places they may be found and precautions taken to safeguard health. It is hoped to put everyone who has landed under observation until all danger has passed. Dr. Leland Coffer, health officer of the port, has redoubled vigilance at quarantine, and hereafter vessels from ports through which typhus may come to this country will be held until there is no longer danger of the disease developing among those on board.

◆

Died.

GRIFFITH.—In Bainbridge, Ga., on Tuesday, January 11th, Dr. William Willis Griffith, aged thirty-two years.

JANEWAY.—In Riverdale, N. J., on Tuesday, February 1st, Dr. Henry Harrington Janeway, of New York, aged forty-eight years.

MCANIFF.—In Philadelphia, Pa., on Saturday, January 29th, Dr. Hugh P. McAniff, aged fifty years.

MOSHER.—In Brooklyn, N. Y., on Monday, January 31st, Dr. Burr Burton Mosher, aged fifty-four years.

MUTH.—In Sheboygan, Wis., on Thursday, January 13th, Dr. Carl Muth, aged seventy-eight years.

PARKHURST.—In Paterson, N. J., on Saturday, January 29th, Dr. Gabriel Harrison Parkhurst, of Allendale, N. J., aged eighty-four years.

PARKS.—In Tacoma, Wash., on Wednesday, January 19th, Dr. Clarence Milton Parks, aged fifty-seven years.

ROBB.—In Catonsville, Md., on Sunday, January 30th, Dr. John A. Robb, aged sixty-one years.

SLOAN.—In East Liverpool, Ohio, on Thursday, January 27th, Dr. William J. Sloan, aged eighty-two years.

STEVENS.—In New York, on Sunday, January 30th, Dr. George Thomas Stevens, aged eighty-eight years.

TESCHAN.—In Milwaukee, Wis., on Tuesday, February 1st, Dr. Rudolf C. Teschan, aged sixty-eight years.

Book Reviews

STAMMERING.

The Real Cause of Stammering and Its Permanent Cure. A Treatise on Psychoanalytical Lines. By ALFRED APPELT. Second Edition. London: Methuen & Co., Ltd. Pp. xi-234.

An advocate's plea for a system of belief or a new therapy is not always strengthened by his testimony that he personally has experienced its benefits. If he for that reason believes his subject incontrovertible he may be accused of blindness due to his own peculiar emotional relation to that which he advocates—the benefit itself may rest only upon that. There is a false logic in that case, usually conspicuous enough to a reader whose prejudice retires in favor of even a mild exercise of intellect in the perusal of the facts presented.

When such sober reading finds the discussions punctuated by premises that totter under the slightest pressure of logic, and illuminated (?) by the most puerile departures from the science of observed facts, the reader peers more closely at the revealed emotional relations of the writer to the matter under his descriptive pen. Then the difference becomes evident between a writer who sturdily forges ahead in a world of facts, many only newly discovered, occult enough still to suggest others yet which it may take courage to investigate and admit—the difference is evident between such a writer and one already immersed in a "sensitizing" fluid of emotion. Through this the latter delights to separate himself from the stern actualities about him in favor of an existence with a mirage of "appearances" in which temperamental, autoerotic thrills and wish-fulfillments play their active part.

Appelt states quite candidly but unobtrusively that he testifies in two directions regarding the cause of stammering and its cure, based on such cause, because he has the weight of his own experience. He bears witness to the burden of this disorder upon a human life, and the wearisome futility of all the past points of attack because of ignorance of the all important foundations of the existence of the disorder. Then he brings carefully considered testimony to bear upon the discovery of the hidden psychic roots of the disorder and the effect of bringing these through psychoanalysis into the control of the patient's conscious personality. This allows the conscious adult personality to utilize its effort successfully upon the matter at its source, rather than to waste years upon external means. For these remain remote from the heart of the matter and only add to the burden of overself-consciousness and inferiority, of which speech disorder is merely one symptom.

This is no spectacular presentation of the marvelous loosening of a tongue through a profound psychotherapy. The writer partly promises the clearer presentation of the actual treatment at some future time. It is, however, a discussion ample and yet simple, of the recognition throughout past history of such a disorder as stammering, the efforts, honest and otherwise, to reach the patient's difficulty and help him out of it. It includes an interesting chapter on the mechanism of speech in its normal building up and its liability to interference, and a discussion of the pathology and etiology of the stammering phenomena. This leads on into that deeper psychic background when stammering is found linked with those inner emotional disturbances which have proved themselves causative for other recognized psychoneurotic manifestations. The author presents in his own simple manner, with the freshness of a new point of view for material growing daily more familiar, the chief features of psychoanalytical psychology, the existence of the unconscious, the nature of its content, and the effect upon outer activities of the complexes abiding there. Then with equal brevity the therapy is traced, which reaches these complexes and brings them at last into conscious control.

THE SCIENCE OF GROWING OLD.

Old at Forty or Young at Sixty. Simplifying the Science of Growing Old. By ROBERT S. CARROLL, M. D., Medical Director, Highland Hospital, Asheville, N. C. New York: The Macmillan Company, 1920. Pp. 147.

The lively young man of sixty will endorse Dr. Carroll's statements with approval; the aged one of forty will discard them as an impossibility—the impossibility of changing fixed habits at his time of life—and those aged by laziness or greediness will bombard him with reasons for their cussedness. We all know them, these prematurely old, unreasonably old, who do things because their grandfathers did, even to having their diseases and certain political views. They are slaves of routine, have always had ham and eggs for breakfast, always read one paper, always lamented the wickedness of today and been in bed by eleven.

Or there are those humbugs who are professing to prevent by pill and powder, by electrotherapy, by hydrotherapy, that which they do not mean to prevent. They give up society, literature, music, travel, in order to sit with their miserable bodies.

"The majority who find health slipping at forty, overeat; the minority undereat; in both cases, the balance has been broken. The millions live through their working years too close to their margins. Stinted in interests, their minds are unconsciously hungry, destitute of physical reserve, without visions; life for them is restlessness and emptiness. Many men and more women find themselves at forty feverishly seeking the comforts that disintegrate, and as resolutely avoiding effortful thinking, working, and feeling."

Behold now, to be young at sixty! Let the day begin with exercises, really strenuous ones. Samples of them are given, though the one of running on all fours, which a doctor recently advocated, is not given; possibly it was too simian. As regards food, knock out mince pie, plum pudding, pork, pickles, fried food, fudge, white flour bread, syrupy desserts, highly seasoned soups and sauces, greasy vegetables, excess of salt, strong tea and coffee. Plenty of exercise, as much reading—good reading—as possible. If you are too thin, study page 48; if too fat, page 50. If you are a brain worker, a régime is given which, if followed for six months, will prolong life six years.

The gentle cigarette, the soothing pipe, are damned with faint praise. Tobacco and alcohol are classified with aspirin, phenacetin, and acetanilid. We are advised to "Eat, drink water (not *eau de vie*), and be merry."

Of course, a doctor can only say what one ought to do, but for how many the sane, well regulated life, is hard to attain to when there is only a boarding or lodging house life, or a family crowded into a small apartment house with a kitchenette. The beginning of a day, before work, is all too short; the end finds a person—that is, the ordinary worker—too weary to care much about his bodily, spiritual or mental health. So the years go on until forty finds him old, and sixty so tired, so tired.

Nevertheless, Dr. Carroll gives wise advice, and promises a cheerful old age, because, he says, calories, food values, nutritional balancing, and the personal equation, were unknown when David spoke gloomily of old age, and when Solomon described it as decrepitude, fearsomeness and loneliness, though whether he really meant teeth when he said "the grinders shall be few" is doubted. He certainly did not care for earlyworm fiends, because he said, "Cursed be he who riseth up early in the morning, even though it were to bless thee." He preferred his guests to stay in bed until breakfast time when visiting him.

Above all, the author extols the serenity begotten of a strong faith in the God who understood about calories and food values, even though David and Solomon did not.

COMMUNITY HEALTH.

The Community Health Problem. By Athel Campbell Burnham, M. D., Health Service, Atlantic Division, American Red Cross; Attending Surgeon, Volunteer Hospital, New York City; Lieutenant Colonel, Medical Reserve Corps, U. S. Army, etc. New York: The Macmillan Company, 1920. Pp. 149.

There are many who would not object to having medical care laid on like water and electricity; who would be the first to shout when the health officer came along to enforce one of those many rules which affected them as one of the community. Doctor my child, yes, but do not begin tearing up my drains or inspecting my garbage pails. Treat my wife for diphtheria, but I deny your right to upset my household with fumigation. Hurry and prevent scarlet fever in the school, but you have no right to urge the demolition of my slum property. The duties of community doctor and family doctor are beginning to clash. It is clear that the latter cannot assume more duties unless freed and made really independent of private practice, and it is equally clear that those who can afford to pay for an efficient medical man will not be eager to contribute for one to take general supervision of and dictate measures to preserve public health.

Such service, once only occupied with such matters as quarantine and marine hospitals, with an appropriation of less than a million, has in 1920 a sum of eighteen million dollars. We have industrial and rural hygiene, maternity and child welfare, water supply, milk, sewage disposal, malaria, venereal disease, tuberculosis, and other things.

The author forces a reluctant consent that this is no work for a doctor plus private practice, but requires a special man with an adequate salary, and not only one man, but a host of specialists, capable of understanding the new catalogue system, and who will not put the mentally deficient in prison nor leave the prisoners there to work out their own damnation. Neither shall the chronic and the totally disabled be left to eat their hearts out or relapse into sour laziness. Patient teachers can coax vitality and stir the will to grow again.

In industrial medicine, insurance, compensation, these alone, when carefully arranged, would stay many a menacing growl from the working men. Psychoanalysis, too, means an increasing number of competent men, because—although the author does not say so—the employers need a little attention in that way, and many of them would be comfortably housed as mentally deficient in a sanatorium instead of being eventually landed in prison. This remark was prompted by a section headed Medical Care of Employers, instead of "by."

The author is in favor of a U. S. Department of Health with a Secretary of Public Health, including the present Public Health Service, the Board for Child Welfare, the Indian Medical Service, and the minor departments. This would presuppose headquarters and an administrative office controlling the whole service as the surgeon general's office administers. There are also the Red Cross health centres, of which, in March, 1920, that society managed nineteen by itself, and there were fifty-nine others in connection.

The book takes into consideration tuberculosis, venereal diseases, rehabilitation of the disabled, and endowed health demonstrations. The writer does not sit down tearfully incompetent before the problems, but tries to put forward reasonable schemes, and forces the ordinary man to reflect. The thing is, everyone will listen, as they will to moving appeals at meetings, but the enthusiasm, the brotherly love, cool a little as the speaker smilingly sends the man with the plate along the aisles to transmute that enthusiasm into dollars.

BEST PSYCHIC STORIES.

The Best Psychic Stories. Edited with a Preface by Joseph Lewis French, Editor of *Great Ghost Stories, Masterpieces of Mystery,* etc. Introduction by Dorothy Scarborough, Ph. D., Lecturer in English, Columbia University; Author of *The Supernatural in English Literature, From a Southern Porch,* etc. New York: Boni & Liveright. Pp. xv-299.

It would seem that the purpose of devotees of the spirit of this book involves the simple facts of life in the losing mystery of a world made of desires which answer to individual impulses. This takes thought out of relation to the practical things about us. Those who sponsor this book, the editor and the writer of the introduction, assert over and again the wish nature and the limitless power of man's imagination to exercise itself in a field far beyond the ordinary events of life. Yet, when they apply these truths to the stories and the accounts of the supernatural introduced here, they depart from their own statements. They do not consider the power of the imagination as driven by the wish to deceive the natural eyes and ears, sense of touch, or any other avenue of obtaining experience. The stories, however, are fascinating, sometimes marvelous examples of the range of unconscious wish, or its counterpart, fear, for creating fancied situations, or for stimulating to activities far out of the range of ordinary experience.

In the interests which those who claim to be investigators in "psychic" realms have pursued, the wish is often muddled by the form of desire manifest, and by the temperament of those who are assistants in socalled psychic experiment. Yet to the progressive student of the range of individual desire and its varieties as well as its peculiarly confused distortions in manifestation even the absurdities are instructive. The doughlike emanations, for example, from which an appearing spirit is to construct a visible body, appear as childishly human rather than superhuman. The study of the storage of wishes in the unconscious out of never lost experiences of the past is very recent. It has, therefore, only begun to understand the varieties of its appearance or its ability for clouding emotionally man's powers of observation. But this key of wishfulfillment outruns the absurdities into which other explanations fall. It gathers them into a controlling leadership and carries an illuminating torch ahead. The examples of literature given serve to emphasize the source of appearances in a human rather than extrahuman soil.

HELPING THE RICH.

Helping the Rich. A Play in Four Acts. By JAMES BAY. New York: Brentano's, 1920. Pp. 107.

This four act play is at once an attack on private philanthropy, which gives out with a great display of nobility what it has gotten sometimes by unfair means; on the medical profession, which is represented here as supporting private philanthropy because doctors need the jobs in private philanthropy's hospitals, and on people who masquerade as the poor in order to obtain free medical treatment in dispensaries. It is a terribly bad play, but it bristles with points which call for notice. Reviewing this book as a sociological tract rather than a play, the author declares that, "The poor are better able to take care of themselves than you or I, if you give 'em a chance and don't make slaves of 'em and don't squeeze 'em into factories and foundries and foul tenements." He scores the "vicious system which helps to numb the character and suck the blood of selfrespect, and to break down the spirit of self-support of the poor devils who are led to believe that they are actually getting something for nothing in these free for all hospitals.

His remedy for poverty is to suppress the unethically rich. While the rich are being suppressed, he believes in state care for the poor instead of private philanthropy. He is very indignant against the doctors who are helping the rich to maintain this elaborate edifice of philanthropy—in this play St. Stephen's Hospital is maintained chiefly because the wife of the millionaire who maintains it wants to break into society and rival the wife of another millionaire who maintains another hospital. And two of the three doctors in the play are represented as having "sold their souls" to help the millionaire's wife play this entrancing game!

"If it wasn't for Christianity and charity some of the biggest business this country has ever seen couldn't have been pulled off," declares our author, who by implication allies medicine with this pernicious duet. What would happen to the poor if private charity were stopped? Our author believes that they wouldn't die, "they'd dig, yes, and they'd go where they could dig and plant and grow food and pick health and strength from the soil." He doesn't say how our vast industrial establishments are to be run if the poor all go back to the land, but perhaps he thinks that this would not be a calamity. He closes with an optimistic reference to conditions in Europe, where men and women are being forced into a new social vision by the tremendous shaking to which the economic structure has been subjected. In Europe, he says, after the war there is hope of a social order in which power will be drawn from "courage and accomplishment and not from check books." He does not see the same for this country.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

ROCKEFELLER FOUNDATION. Annual Report 1919. New York: Rockefeller Foundation, 1920. Pp. xi-449.

NERVES AND THE MAN. By W. CHARLES LOOSMORE, M. A., Brown Scholar at Glasgow University. A Popular Psychological and Constructive Study of Nervous Breakdown. New York: George H. Doran Company, 1921. Pp. x-223.

THE ENDOCRINES. By SAMUEL WYLLIS BANDLER, A. B., M.D., F.A.C.S., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Philadelphia and London: W. B. Saunders Company, 1920. Pp. viii-486.

MEDICAL SERVICE IN MODERN WAR. By P. S. BOND, Lieutenant Colonel, U. S. Army, and C. F. MARTIN, Lieutenant Colonel, U. S. Army. With an Introduction by Major General M. W. IRELAND, Surgeon General, U. S. Army. An Exposition of the Tactical Functions of the Medical Department in Campaign. With Plates. Menasha, Wis.: George Banta Publishing Company, 1920. Pp. 78.

SURGICAL THERAPEUTICS AND OPERATIVE TECHNIC. By E. DOYEN. English Edition Prepared by the Author in Collaboration with H. SPENCER-BROWNE, M. B. (Cantab.), etc., Eleve de l'Institut Pasteur; Physician to and Chef de Clinique de l'Institut Doyen. Vol. II: Regional Surgery (Continued): Operations on the Head (Continued), Thorax, Upper and Lower Limbs. London: Ballière, Tindall & Cox, 1920 (reprinted). Pp. viii-680.

SURGICAL THERAPEUTICS AND OPERATIVE TECHNIC. By E. DOYEN. English Edition Prepared by the Author in Collaboration with H. SPENCER-BROWNE, M. B. (Cantab.), etc., Eleve de l'Institut Pasteur; Physician to and Chef de Clinique de l'Institut Doyen. Vol. III: Regional Surgery (Continued), Operations on the Abdomen. New York: William Wood & Co., 1921. Pp. ix-811.

ANNALS OF RÖNTGENOLOGY. A Series of Monographic Atlases. Edited by JAMES T. CASE, M. D. Volume I: Mastoids, Röntgenologically considered. By FREDERICK M. LAW, M.D., Röntgenologist, Manhattan Eye, Ear, Nose, and Throat Hospital, New York. Forty-two Röntgen Ray Studies on Twenty-one Photographic Plates and Eleven Text Illustrations. New York: Paul B. Hoeber, 1920. Pp. ix-37.

MALARIA AT HOME AND ABROAD. By S. P. JAMES, M.D., D.P.H. (Lieut. Colonel, I.M.S., retired), Fellow and a Member of the Council of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Geographical Society, The Royal Society of Medicine, and The Medical Society of London, etc. Illustrated with 1 Colored Map and 104 Full Page and Text Figures. New York: William Wood & Company, 1920. Pp. xi-234.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Cancer of the Uterus in Young Women.—Gordon Gibson (*American Journal of Obstetrics and Gynecology,* December, 1920) states that cancer of the cervix occurs with sufficient frequency in young women to make it imperative that the condition be kept in mind. Epithelioma is the type generally found. The growth is much more rapid than in older individuals, and only when the patient is seen in the first three months can a radical operation be done. Extension is especially rapid when the parametrium becomes involved. In any case where the diagnosis is clear, clinically, with a definite growth of the cervix, it is better not to wait for a microscopic report, but to operate immediately, as the author has seen the process destroy the cervix and invade the parametrium during the week elapsing between the taking of a specimen and receipt of the report. If a laboratory properly equipped to make frozen sections is available, this difficulty may be obviated. Petersen, in a study of 500 cases of cancer of the uterus, found 4.8 per cent. of the patients under thirty years of age. Among the author's sixty-one cases there were six patients, or 9.9 per cent., under thirty years. Two of these were twenty-five years old and the other four ranged up to twenty-nine. The first four patients had all married early, viz., at from sixteen to nineteen years. Of the five who had borne children, in four the cancer developed comparatively soon after pregnancy. In only three patients, who had had symptoms for only two or three months, could a radical procedure be carried out with any hope of success. In the other three, in whom symptoms had been present four to six months, only a palliative operation could be thought of, and all died.

Preventive Use of Quinine.—Harold Seidelin (*Journal of Tropical Medicine and Hygiene,* December 1, 1920), after experience in malarial prophylaxis in the Belgian Congo, expresses a preference for the socalled week end method of prophylaxis. The objects of the procedure are: 1, To kill any parasites in the blood by a sufficient dose of quinine, viz., one gram of the hydrochloride in an adult of sixty-five kilos body weight; 2, to give the drug at a moment before the end of the natural incubation period, of which the minimum in malignant tertian infections is six days; 3, to avoid increased resistance of the parasites to quinine, a condition favored by the method of daily small doses. Having often seen parasites persisting in the blood after the first dose of one gram, only to disappear after a second dose, the author administers two doses of one gram each on successive days, e. g., Saturday and Sunday, or Sunday and Monday, of every week. Tablets of 0.25 gram each are used, and the total number of tablets slightly varied according to the body weight of the patient. During twelve years in which this plan of protection has been applied, he has not yet seen a case of malaria develop in any individual whom he had reason to regard as regularly carrying out the procedure. On the other hand, he has seen a number of cases in men who said that they were regular daily quinine takers. Among these also he has occasionally found numerous parasites in the blood on routine examination in spite of the absence of any febrile symptoms. Such an occurence was never observed in persons following the week end system. The one gram dose of quinine is taken in four tablets at hourly intervals, in the morning. Injections are given only in the presence of persistent vomiting. The author lays stress on the need of a reliable and rapid method of microscopic diagnosis in malaria work. Thin blood films are time consuming and unreliable; the thick film method should be adopted as the only procedure by which a considerable amount of fairly reliable work can be carried out by the practitioner within a reasonable time.

Spina Bifida: Operability and Time for Surgical Intervention.—Torr Wagner Harmer (*Boston Medical and Surgical Journal,* December 30, 1920) thus recapitulates the points in his paper:

1. Rounded pedunculated sacs entirely covered with skin, without paralysis: Operation may be safely deferred for a long time, but it is better judgment to adopt the same criterion for operative intervention as in the rounded sessile type.
2. Rounded sessile sacs, entirely covered with skin, without paralysis: Operation should not be deferred longer than is necessary to determine that an equilibrium between secretion and absorption of cerebrospinal fluid has been established, i. e., not longer than several weeks after the sac has reached its maximum size.
3. Rounded sessile sacs, entirely covered with skin, with paralysis: Operation at once in the hope of forestalling inextricable adhesion of nerve elements. Postoperative hydrocephalus may occur, but if we wait for signs of hydrocephalus to appear we shall likely miss the opportunity to cure paralysis by operation. Nonadherent nerve elements in the sac may be successfully replaced within the spinal canal, but nerve elements involved in granulation tissue of the sac cannot be successfully extricated.
4. Rounded sessile sacs, entirely or partly covered with membrane, without paralysis: With scrupulous care of the sac, a delay of a few days is justifiable to demonstrate the unlikelihood of postoperative hydrocephalus. Delay beyond this means excoriation and infection of the sac and poorer operative prognosis.
5. Rounded sessile sacs partially or entirely covered with membrane, with paralysis: Operation at once, in the hope of finding nerve elements which are not inextricably adherent to the sac. With the head obviously hydrocephalic, operation is not justifiable.
6. Defects covered entirely with flat membrane, when narrow and with or without paralysis: Operation at once.
7. Sacs entirely covered with flat membrane, when wide and with paralysis: Operation unjustifiable.

Action of Caffeine and Its Allies on the Heart.—Reginald St. A. Heathcote (*Journal of Pharmacology and Experimental Therapeutics,* December, 1920) describe an investigation of the effects of caffeine, theobromine, and theophylline with especial reference to the coronary circulation. All three have an active vasodilator action on the coronary vessels, probably muscular in origin, caffeine being the weakest and theobromine the strongest. Experimental evidence is thus provided for the use of theobromine in those conditions, such as angina pectoris, in which coronary vasodilatation may be of service.

Management of the Heart in Pneumonia.—Harlow Brooks and John Carroll (*American Journal of the Medical Sciences,* December, 1920) say that the most frequent immediate cause of death in all types of pneumonia is cardiac failure, due in by far the greater number of instances to right heart deficiencies. This occurs because of the limited muscle reserve capacity of the right heart, plus a myocardial degeneration, the result of toxemia. The preparatory and emergency use chiefly of the digitalis group of drugs fortifies the heart against these tendencies, while rest, properly timed venesection, and other adjuvant measures are frequently of great therapeutic utility.

Frequent Mistakes in the Treatment of Accidental Wounds and Infections.—J. Dubs (*Schweizerische medizinische Wochenschrift,* November 4, 1920) urges practitioners not to suture wounds when the tissues are crushed and torn, unless it may be on the scalp, eyelids, or face, but even then care must be exercised, for crushed and torn tissues are not prone to heal by primary union. All devitalized tissue should be excised before primary suture is attempted. The nail should be trephined for a hematoma beneath it. It is dangerous to attempt in the office the removal of foreign bodies. Felons should be incised at once, if no improvement occurs after twenty-four hours of passive hyperemia. The incision should be made under local anesthesia. Infection of tendon sheaths should be sedulously watched for, and, when detected, should be treated immediately by multiple incisions at the side, drainage, and prolonged hot baths with soap.

Bright's Disease with Special Reference to Treatment.—Henry A. Christian (*Southern Medical Journal,* August 1920) protests against indiscriminate tonsillectomy and tooth extraction as useless and perhaps harmful in nephritis. If diuretics are used it is essential that the fluid intake and the urine output of the patients be measured in order that the value of the drugs may be judged on the basis of whether or not they actually increase the output of fluid from the body; if they do not cause a diuresis, their use should not be continued. It is wrong to diagnose nephritis on the basis of finding albumin and casts in the urine, or because of any single symptom or sign. Bright's disease is a general condition, not solely a disease of the kidneys, and must be recognized from observed general conditions. Treatment based on the diagnosis is probably worse than no treatment, but intelligent individual management of the nephritis patient can accomplish much.

Anesthetic and Convulsant Effects of Gasoline Vapor.—H. W. Haggard (*Journal of Pharmacology and Experimental Therapeutics,* December, 1920) reports experiments performed on dogs to determine the possible part which gasoline vapor might play in the poisonous effects of exhaust gas. The conclusion reached is that although gasoline vapor has an intoxicating effect, the toxicity of a given amount of it is vastly less than that of the carbon monoxide produced by its incomplete combustion in an engine. In general, gasoline vapor showed an anesthetic action somewhat like that of ethyl ether, but with marked convulsant effects, doubtless due to irritation of the cerebral cortex. The stage of excitement in ether anesthesia is marked by convulsions under gasoline vapor. The stage of full anesthesia, between consciousness and death, is very narrow.

Influence of Intravenous Injections of Acacia-Glucose Solutions on Urine Excretion and Blood Volume.—P. M. Mattill, K. Mayer, and L. W. Sauer (*Journal of Pharmacology and Experimental Therapeutics,* December, 1920) report experiments conducted to ascertain how far acacia may be relied on to keep up the blood volume in spite of a marked loss of water through the kidneys. Rabbits were given intravenous injections of glucose at a definite rate, and after several days another injection of glucose, with the addition of six per cent. of acacia. The results showed that acacia is capable of maintaining the blood volume in spite of a marked glucose diuresis. Injecting acacia glucose mixture containing thirty to forty per cent. of glucose in quantities of about one half of the rabbit's blood volume in one and one half hours, a decrease of the blood volume was practically prevented by the presence of three per cent. of acacia in the injection fluid. Glucose injections without acacia produced uniformly a diminution of the blood volume.

The Significance of Hematuria.—Arthur L. Chute (*Boston Medical and Surgical Journal,* June 17, 1920) found in a study of one hundred cases of hematuria that the condition depended upon the following lesions of the urinary tract: Bladder infiltrating growths, thirty-two; bladder massive papillomata, eleven; bladder small papillomata, seven; hypernephromata, eight; prostate, benign, seven; prostate, malignant, six; nephritis, seven; renal tuberculosis, five; hydronephrosis, three; stone in kidney, four; stone in ureter, three; stone in prostate, one; Banti's disease, three; polycystic kidney, one; diverticulum bladder, one, and papillary cystitis, one. In this list not a single case can be accounted for by oxaluria or a shower of uric acid crystals, and very few in which one can afford to procrastinate if he is to give his patient his best chance. This series of cases proves that hematuria is not a condition to be looked upon lightly; that in more than one half it is indicative of a very serious condition which is remediable only if recognized and treated early; that in only a small proportion, as in bleeding nephritis, can it be said that it makes no real difference whether they are attacked early or not, but that in these very cases investigation is essential, as otherwise they cannot be distinguished.

Proceedings of National and Local Societies

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Fourteenth Annual Meeting, Held in New York, March 23 to 25, 1920.

The President, Dr. CLAUDE C. LYTLE, of Geneva, in the Chair.

(Concluded from page 264.)

SYMPOSIUM ON VITAMINES.

Fat Soluble Vitamine A.—Professor LAFAYETTE B. MENDEL, of New Haven, presented a paper on this subject, in which he said that to Professor Hopkins, of Cambridge University, England, much credit was due for his researches in foods and vitamines. The report of the Lister Institute in England should be read by those who were interested in the subject. It was assured that more than one accessory factor in the diet might become responsible for deficiency diseases. Scurvy was one of these, and its cure depended on antiscorbutin; beriberi was another, and it might be cured by small quantities of yeast which contained the antineuritin. Yeast is strongly antineuritic, but is not antiscorbutic.

Professor Mendel described his experiments of feeding animals (rats) on a diet deprived of the fat soluble vitamine by prolonged extraction of the foods with alcohol and ether and then feeding various substances to supply the fat soluble vitamine. It might be said that this vitamine was present in fats derived from animal tissues and in roots and tubers, but was missing in purified commercial vegetable oils. The oily residue in spinach was comparatively rich in fat soluble vitamine. In feeding animals on a diet free from fat soluble vitamine the symptoms noted were a loss of weight or a failure in normal growth, the loss in weight sometimes being sudden, resembling the decline in malnutrition in children. Another common feature was a condition of the eyes known as xerophthalmia, the precise nature of which was still under observation. These changes were found in rats fed on a diet devoid of fat soluble vitamine. Bacterial invasion was not a cause of this condition. Animals in unfavorable physical condition, not deprived of fat soluble vitamine, did not develop this condition.

Professor Mendel pointed out that another abnormality encountered at autopsy was the presence of calculi in the bladder and ureters. These calculi were composed of calcium phosphate and attained a large size. More recently the rôle of the fat soluble vitamine, as an antirhachitic, had been brought into consideration. There was abundant evidence that water soluble B was needed throughout life. In the case of fat soluble vitamine, the indications were that it was needed particularly in the early stages of life. Full grown rats might be kept in health on amounts that did not suffice at an early age when growth was rapid. Inasmuch as butter fat had been employed as a source of this food factor, comparisons could be made. About one tenth of a gram of butter fat a day, in connection with an otherwise adequate diet, served to keep animals (rats) in health. With a tenth of a gram of dried spinach the results were equally favorable. Even more striking had been the results obtained with dried tomato, which served as the source of fat soluble vitamine for fourteen months. This vitamine might bear some relation to pigments; thus white potato was comparatively poorer in it than carrots or spinach.

The question of the stability of fat soluble vitamine had been the subject of debate. Some contended that butter fat through which live steam had been passed did not lose its properties; others have said that it was destroyed by heat. Professor Mendel said that he had found it still potent after heating. The vitamine in liquid butter oil was very stable. In the hydrogenation of oils the vitamine was destroyed. The antiscorbutic factor was more susceptible to disturbance by heat than others. It had been demonstrated that heat applied in the sterilization of food might destroy or diminish the antiscorbutic vitamine. Unfortunately this fact had been subjected to broad generalization with respect to all foods. It was known that orange juice and tomato juice were very stable. The wide distribution of water soluble vitamine seemed to render the possibility of a deficiency of this vitamine less likely to occur than that of fat soluble vitamine. The success of the Danish people in nourishing themselves during the latter years of the war was due to the abundant intake of plant foods supplying the missing factor. It was necessary to emphasize that these vitamines had not been isolated. In view of this fact men interested in diets should beware of false statements in regard to the claims of nostrums alleged to contain vitamines.

The Antiscorbutic Vitamine.—Dr. ALFRED F. HESS, of New York, read a paper on this subject, in which he said that while in the days of long voyages scurvy constituted one of the greatest plagues in navies, it must not be thought that because voyages were shorter now and we had refrigeration, that scurvy was a thing of the past. In the world war scurvy was by no means absent; many cases of it occurred among the British colonial troops in Mesopotamia, Russia, and Rumania. The character of scurvy had changed, and it now presented itself in the latent form. It might occur in fever or in patients suffering from gastrointestinal diseases whose diet had been limited. However, scurvy was more particularly a disease of artificially fed infants. This disorder was also important because it led to other diseases. For instance, it was found during the war that those who had a lack of the antiscorbutic factor were more subject to pneumonia and more often succumbed to it, and that wounds healed less readily in such patients. Diseases which ordinarily showed a slight petechial rash, such as meningitis, might show a hemorrhagic rash in a patient suffering from scurvy even in latent form.

Dr. Hess said that more was known about the antiscorbutic vitamine than the others. It was known that it was soluble in water and in alcohol, and that it was the most sensitive of the vitamines to heat and drying. There was no evidence that the antiscorbutic vitamine could be stored up. In an experiment on guineapigs, in which one group was given a minimum amount of orange juice and another group twice that amount, and then both groups fed on a diet deprived of the antiscorbutic factor, scurvy developed in both groups in the same length of time. In other words, the patients who got the twofold dose were not able to avail themselves of the excess.

As to the function of the vitamines, the antiscorbutic vitamine seemed to be needed for the endothelial cells of the bloodvessels, and if there was a lack of this vitamine, the bloodvessels gave way and hemorrhages occurred which were characteristic of scurvy. This was subject to experimental test. For instance, if in a case of scurvy the wrist was bandaged, the increased circulation would lead to a large number of petechial spots on the forearm. In other words, the bloodvessels were unable to resist the increased pressure; after administration of orange juice this test would result negatively. Other cells were not so sensitive to lack of this principle. Infants suffering from scurvy gave a negative Schick reaction.

As regards the presence of this vitamine in the various food substances, this substance was contained mainly in vegetables and fruits; oranges, lemons, cabbages, and onions were particularly rich in it, whereas apples and beets were low. Then the amount varied in the same vegetable, new carrots containing more than old. A table of percentages could not be framed with any degree of accuracy. The British Commission said that drying destroyed the antiscorbutic principle in foodstuffs, and that all dried foodstuffs were deprived of antiscorbutic value. Dried milk, if properly prepared, had antiscorbutic properties, but, of course, the milk to be of value must originally have possessed these properties. Milk must be dried quickly and hermetically sealed soon after. Dried milk could retain antiscorbutic properties for three months. Dr. Hess said that he did not mean to say that it was not advisable to give antiscorbutic food with dried milk, but he wished to show that milk could be dried and still retain its antiscorbutic properties. The same was true of canning, although canning usually destroyed the antiscorbutic properties. As Dr. Mendel had said, acids in particular preserved and protected the antiscorbutic vitamine; they protected it against heat and drying and canning, and, therefore, it was found that canned tomatoes were very rich in antiscorbutic properties, partly because they were acid and partly because they were put up in a sealed container.

The question of the access of air to foodstuffs was of prime importance. Foods lost their antiscorbutic properties on exposure to air. There was no more valuable antiscorbutic for the prevention and cure of scurvy than canned tomato. It was cheap, was well borne, and was available. The tomato was given strained as taken from the can, without any previous heating, and given in doses of one ounce to the youngest babies. As regards milk, pasteurization impaired the antiscorbutic property, but did not entirely destroy it. Babies that were nursed did not have scurvy; it developed only in the artificially fed ones. There was no reason to believe that human milk was any richer in vitamine than cow's milk. Six ounces a day of mother's milk was found insufficient to cure scurvy. It was known that it took about sixteen ounces of cow's milk a day to cure scurvy, so that the antiscorbutic content of human and cow's milk was about the same.

Finally, there were few frank cases of scurvy among infants in this country. Infants usually received just about enough milk to protect them, but if they were artificially fed for long periods they did not receive the optimum amount of antiscorbutic substance, and, therefore, they would suffer from a latent form of scurvy. While this condition was not important in itself, it was likely to lead to a condition of greater susceptibility to infectious diseases and intensified the course of an infectious disease. It was better to start feeding infants on an antiscorbutic diet earlier in life than was customary, say at the age of three months.

Water Soluble Vitamine B.—Professor THOMAS B. OSBORNE, of New Haven, presented this paper (by invitation). He said that the effects of diets free from this vitamine had convinced us that this vitamine was essential for all animals, but no records existed to prove it was essential for man. In the past the deficiency features of foods poor in vitamines and their effect on man and animals had chiefly interested investigators. Dr. Osborne wished to say a word about the stimulation of metabolism by vitamines. In such experiments the calorimeter must be resorted to. Food intake was a proximate measure of the animal's metabolism. Under natural conditions normal animals, including man, adapted their consumption of food to their need in calories. It was plain that each ingredient needed would be eaten in sufficient quantity. Under those circumstances food intake indicated vitamine intake. Long continued maintenance in a general state of debility followed the ingestion of food low in this vitamine. If the vitamine intake was increased appetite at once returned, and unless during the period of debility the animal had contracted some infectious disease, or suffered organic change, it was rapidly restored to health and vigor. This could only be attributed to a stimulation of the metabolism. It was the administration of the vitamines that caused the recovery, not the amount of food taken. There were individuals who lived for years with a correspondingly low food intake. It was probable that the poor appetite of these individuals was due to the small amount of vitamine they took in. If this surmise was correct, they should be improved. Those men and women who habitually ate too little food might require more vitamine than the average dietary supplied. A large part of the food of the American was deprived of vitamines; thus sugar, flour and rice in their preparation were deprived of these substances. No great harm, as a rule, resulted because we ate other food substances and obtained the proper amount. In feeding people whose metabolism was low and whose intake of food was small, too many calories should not be supplied without vitamines. For example, this was done in convalescence where the physician furnished fruit and restricted the amount of rich food. Too little scientific investigation heretofore had been given to the phenomena of the planes of metabolism of different individuals, the active individual as compared with the lethargic one. What was meant by the power of recuperation? What was meant by obesity? These conditions mostly concerned metabolism, and with them the physician frequently dealt by prescribing sedatives. Possibly these conditions depended on the stimulation of vitamines. It might help in prescribing diets in special cases to know what had been recently learned as to the sources of water soluble vitamine. Dried brewer's yeast was rich in this substance. Dr. Hess said that he and Dr. Mendel had shown that oranges, lemons and grapefruit are rich in water soluble vitamine, apples and pears furnished less, and bananas still less. Among vegetables some had a large content, such as tomatoes, cabbage, and onions. Among animal foods milk, eggs, liver, kidney and heart contained the most water soluble vitamine, while meat and fish contained less. Yeast consisted of nucleated cells, and was richer in purin bases than almost any other food product, and should not be used where purins were contraindicated. Yeast had been prepared free from purin derivatives.

Dr. E. V. McCollum, of Baltimore, in discussing the subject said that there was very little to add in regard to these three dietary essentials which all now agreed were indispensable in the diet of man. There was one thing that Dr. Hess had omitted, perhaps inadvertently, and that was that they had found at the Lister Institute in London that during the germination of seeds there was a marked increase in their content of vitamines. Dried grains were almost valueless in the treatment of scurvy, but if the same grains were sprouted they immediately developed antiscorbutic properties. Muscle meats which had been mentioned in the discussion had been shown to have almost no protective action against scurvy. Muscle meats were poor sources of all three of the recognized dietary essentials which were concerned in the etiology of the specific deficiency diseases, scurvy, beriberi, or polyneuritis, and xerophthalmia, if this latter had ever occurred as a deficiency disease in man. There was no doubt that Dr. Mendel's statements in regard to the stability of the fat soluble vitamine were true, notwithstanding the observations of others that it was destroyed by heat.

Different investigators had come to honest differences of opinion in regard to these matters of the stability and value of the properties of vitamines. Their conclusions were based on the results of experiments on animals. Now there were no standards by which the results of experiments on animals could be measured—the condition of the animal experimented on varied markedly, and the effect of different substances in the cure of the condition of the animal were subject to marked variations dependent on the interpretations of the investigator. The difficulty in this field was that there was no standard of procedure, and workers were not all trying to do the same thing.

However important these substances might be in the etiology of deficiency diseases, they were not the whole story in nutrition and dietetics. There were other factors equally important. Dr. Mendel and Dr. Osborne had made comparisons of the biological values of proteins from different sources, and it was known that proteins from certain vegetable products were more distinctly lower in biological value than the proteins of other foods, notably milk and eggs. It should be appreciated that combinations of foods were indispensable to the making of a proper diet. Dr. McCollum said that there was no reason to believe that the danger line was even approached in the diet of the average American citizen, who was free to make his choice as to diet. It was another question whether the inmates of an asylum, or a prison, or orphanage, did not run too short on at least one of these unknown vitamines. He said that he had had an extremely interesting experience in improving the diet in an orphanage in Baltimore. In a group of negro children, whose surroundings were excellent as regards sunlight, air, and sleeping conditions, not a single child was up to the normal in nutrition. The food intake and diets of these children were investigated, and it was found that they were fed on a diet of bread, cornmeal, and other cereals, with vegetable soups made largely from rice, peas, beans, and meat. It was essentially a seed, meat and tuber diet. By supplying fresh vegetables and dairy products, milk and eggs, marked improvement was noted in the condition of those children. Few people realized that a diet of meat, bread, and potatoes was not a satisfactory diet. It could only be made so by the inclusion of dairy products and fresh vegetables.

Dr. L. Emmett Holt, of New York, said that it was a happy thought of the chairman to bring together at this meeting the laboratory workers who had contributed so much to the subject. The best work along this line had been done in this country. He had visited the laboratories of Dr. Mendel and Dr. Osborne. They had contributed a great deal to the understanding of the problems of nutrition, and had shown how progress along this line could be accomplished. Nevertheless, care must be observed in carrying over into human practice the conclusions derived from animal experiments. One thing that had impressed Dr. Holt was the widespread occurrence of these vitamines in our common foods. It was the patient who had come to restrict his diet to a few foods that suffered; it was the child that had been fed on an exclusive diet who had trouble from the lack of a special vitamine. If common foods were eaten in abundance in their natural state, an abundant supply of vitamines would be obtained. The tendency at the present time was not to let well enough alone. Foods were continuously being purified without being improved. Milk was pasteurized, and foods were dried, and people had got into the habit of eating less foods, so that the danger of deficiency diseases was increased. The lesson was that a variety of foods should be eaten. The child should be taught to eat the proper food. The whims of the child were catered to by the parents, who took one or more things away from the child's diet. There was much talk about milk being the perfect food. It was not, even for the calf. The calf was born with eight teeth, and ate grass immediately after birth, and Nature did not intend him to live exclusively on milk, and great harm had been done to children who were living on an exclusive milk diet and were refused other foods.

Of all these deficiency diseases the one that concerned us most was scurvy. Dr. Holt had been interested in finding out how long it took to produce scurvy. He found that it could be produced in a guineapig in eighteen to twenty-one days, and death would occur in five weeks. How long did it take a child fed on pasteurized milk to develop scurvy? How soon was it essential to give antiscorbutic vitamine to a child fed on pasteurized milk? Dr. Holt had treated two infants who had been fed on pasteurized milk with only cereal additions; in one of these infants scurvy developed at eight months. It was known that the pasteurization of milk did not destroy the antiscorbutic vitamine, but impaired it, and pasteurized milk had less of the antiscorbutic vitamine than raw milk. Of course, the condition of the infant fed on pasteurized milk was not parallel to the condition of the animal wholly deprived of antiscorbutic vitamine. Apparently an infant who was getting pasteurized milk as its chief source of supply was not likely to show symptoms until between the eighth and ninth months. Consequently it was safe to give an antiscorbutic to an infant at six months, and this should be continued as a regular part of the diet.

With reference to some of the antiscorbutics, Dr. Hess had spoken of tomato juice, which was certainly the cheapest for hospital, dispensary, and institution practice. If a ten grain powder or tablet of benzoate of soda was added to a pint can of tomato, it would keep until it was used up. Tomato juice could be given freely to infants six months old, and in the same dose as orange juice, with beneficial results in the prevention and cure of scurvy.

Dr. Holt said he had been interested in the effect of dried orange juice. In one case he had cured scurvy promptly with orange juice that had been dried a year before. Apparently the drying of orange juice did not impair its antiscorbutic properties, and it appeared the keeping of orange juice for long periods of time does not injure it either. As far as the other vitamines were concerned, children were sure to get enough of them.

◆

Letters to the Editors.

HABIT FORMING DRUGS.

New York, *January 24, 1921.*

To the Editor:

I am sending you for publication a copy of a letter sent to Senator Jones, expressing the opposition of the Public Health Committee of the New York Academy of Medicine to the proposed measure, which prohibits the exportation from and transit through the country of habit forming drugs and restricts importation to such amounts of crude opium and coca leaves as the United States Public Health Service may determine.

The committee is opposed to the bill for the following considerations:

1. The government regulation would create a dearth of drugs and concomitant increase in price;

2. Smuggling will be encouraged, the drug addicts will continue to be supplied through illicit channels, and legitimate medical requirements will suffer;

3. A monopoly of production of morphine, codeine and cocaine will be created as importation will be limited to crude products only; and,

4. The desired protection of drug habitues in foreign countries could be obtained if the existing law be amended in conformity with the provision of the Hague Convention of 1912, limiting exportation to such persons in foreign countries as possess permits from their own governments for the importation of the drugs.

Will you be good enough to give this letter publicity in your next issue?

Very truly yours,
E. H. Lewinski-Corwin,
Executive Secretary, Public Health Committee,
New York Academy of Medicine.

* * *

New York, *January 20, 1921.*

My dear Senator—The Public Health Committee of the New York Academy of Medicine has given a great deal of consideration to your bill, No. 4553, which prohibits the exportation from and transit through the country of habit forming drugs and restricts imports to such amounts of crude opium and coca leaves as the United States Public Health Service may determine.

The Public Health Committee is in full sympathy with the motive of this bill but desires to point out certain difficulties which would arise if this bill were enacted into law.

1. To entrust to official discretion the determination of the amount of crude drugs to be imported into the United States for medicinal purposes is likely to result in there being no reserve for unforeseen emergencies; first, because of the limitation of the supply, and secondly, because of the probable deflection of a certain amount into illicit channels, creating a dearth of the drugs for legitimate medical purposes and resulting in a great deal of suffering.

2. The limitation of imports, as proposed, will create a tendency to smuggling with which, in view of the difficulty of tracing small amounts which could be sent in letters and other ways, it would be exceedingly difficult for even a large force of Custom House officials to cope. In other words, legitimate users would be handicapped while those whom we try to protect will not be benefited by the legislation.

3. If the present law should be amended to incorporate the provisions of article 13 of The Hague Convention of 1912, that is, to limit the exportation of drugs to such persons in foreign countries as have special authorization or permits from their respective governments for the importation of the drugs in question, sufficient control will have been provided for the protection of the drug habitues in foreign countries and, moreover, this would be more in accordance with the provisions of the aforesaid treaty than the complete prohibition of exports.

4. The limitation of imports to but crude opium and coca leaves would mean that no morphine, codeine, cocaine, and other preparations could be obtained in this country except of local manufacture, which would be a trade protective measure of an extreme character and it will inevitably tend to increase the price of these products for legitimate purposes.

These are the principal reasons why the committee is opposed to the passage of the bill as proposed by you. In the opinion of the committee such a law will only be unduly restrictive on those who will legitimately have to use the drugs and it would not in any way change conditions it is intended to ameliorate.

We sincerely hope that you will give thoughtful consideration to the objections raised by the committee.

Very truly yours,
E. H. Lewinski-Corwin,
Chairman.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Weekly Review of Medicine, Established 1843.

VOL. CXIII, No. 8. NEW YORK, SATURDAY, FEBRUARY 19, 1921. WHOLE No. 2203.

Original Communications

A MINIMUM COURSE IN PSYCHOPATHOLOGY FOR MEDICAL STUDENTS.

By EDWARD J. KEMPF, M. D.,
New York

Psychopathology has made such important revolutionary contributions to the understanding of human nature and the causes of normal and abnormal behavior that the physician who has not kept informed may be doing the neurotic patient no little harm through his unintelligent advice. This new knowledge of psychopathology is of the utmost importance to the medical student and physician, whether specialist or general practitioner, for the treatment and control of his cases. Much of the suffering of humanity and many cases of insanity would be prevented if the principles of psychopathology were generally understood by physicians and they had to do less therapeutic experimenting. Practical insight can only be attained through understanding the physiological and psychological functions that have fundamental influences upon human behavior. These functions must be presented in a full course of lectures and laboratory work in order to protect the patient from being made the subject of experimental curiosity and probing questions. Many physicians and half psychoanalyzed people are taking up psychoanalysis with the delusion and selfassurance that in psychoanalysis one does nothing but talk, and one cannot really injure a patient, or, even if so, blame cannot be placed upon some definite mistake like an error in surgery.

This course in psychopathology is outlined in order that, if fully elaborated in lectures and research work, it will provide an intelligent working basis for the physician. The physician must take up psychopathology as seriously as surgery. Otherwise, within a few years, the country will swarm with people who will be advertising themselves as psychoanalysts and practising a drugless medicine. They are springing up like weeds to fill a rich field which is strictly medical but has been stupidly neglected through prejudice. The temptation is great because of the indifference of the medical profession (as yet) and the fact that an intelligent person can prepare himself sufficiently to start by reading a few books on the subject and being analyzed for a few months by professional psychoanalysts in order to learn how to ask questions and what not to ask. With true zeal some are planning to devote their lives to psychoanalysis, actually relieving others who suffer from repressed emotions, but many are gratifying the sexual curiosity that usually obsesses the half psychoanalyzed. In justice to some of these people it must be said that they handle a neurotic with far more insight and effect than many physicians who pose as specialists in psychiatry and neurology.

The whole social principle of their work, however, is wrong; seriously wrong because of the quackery that is made possible by practising therapy without a medical training. The attitude of the medical educator—the medical editor, the board of trustees, the professors of surgery and medicine and neurology, is to be blamed for the physician's ignorance, the patient's failure to get relief from repressed emotions and the need for psychoanalysts.

Because this country literally swarms with striving, sexually more or less distorted neurotics, the field is rich and easy of access. The most effective method of treating the neurotic is through psychoanalysis and reeducation, and the average physician knows nothing about such things, because the medical educators avoided teaching psychopathology. Many people, who are now lecturing, writing and practising psychoanalysis, are indifferent to studying medicine because of the difficulties of studying the unromantic subjects that make up a sound medical education. In this respect they are further discouraged by the time and expense necessary to obtain a medical education and the indifference of the medical atmosphere to their work, and are encouraged, on the other hand, by the incontrovertible experience that physicians, with medical knowledge, had failed to cure their neuroses. Hence why study medicine? Much better study human behavior and practise psychoanalysis with "light cases."

The medical profession may persecute these people but cannot prosecute them because they do not use drugs. On the other hand, persecution can only stimulate them to fight back and cast ridicule upon the medical profession's indifference and ignorance about the influence of the emotions upon health and disease.

This is an old fight. It has always been miserable in its bitterness and must this time be avoided, by the physician proving to humanity that he understands human behavior and knows how to treat its distortions. He can only carry this conviction by fully understanding the principles of psycho-

Copyright, 1921, by A. R. Elliott Publishing Company.

pathology, psychoanalysis and social reconstruction.

I believe the medical profession will have to face this problem, because at St. Elizabeth's Hospital, Washington, D. C., men and women who assisted me in psychopathology, who were not physicians and were not bothered by the physician's method of neurologizing about the psychoses, took the same cases that neurologists had utterly failed to understand and through psychoanalysis succeeded in bringing about readjustments to normal thinking and behavior. This is particularly impressive because some of these cases were decidedly of the socalled dementia præcox type and had been given up as incurable by physicians in the hospital and outside. The medical educator may keep his eyes shut to this (like the old orthodox resistance to vaccination) but the people will not. The solution cannot come through the physicians protecting their inferior ignorance and persecuting psychoanalysis, but must come through understanding it and using it better than those who have no medical training.

The following outline is a minimum of what should be taught in a course in psychopathology:

1. A review of the primitive origin of the autonomic apparatus as found in comparative anatomy and embryology; its evolution into specialized organs as tissues tend to specialize in function; the origin and nature of the endocrine glands; the influence of the endocrine glands on metabolism, growth, organic inferiorities and superiorities, irritability, stupidity, fatigability, recoverability, sexual potency, impotence, fear, apathy, the genesis of power; the influence upon function and structure of atrophy of disuse and sustention of used tissues. (One hour with specimens.)

2. The functional and anatomical relations of the autonomic apparatus to the projicient or striped muscle nerve apparatus and the exteroceptors, enteroceptors, and proprioceptors; the views and theories of the important contributors to the knowledge of the organic nature and functions of the autonomic or sympathetic apparatus. (One hour with specimens.)

3. The physiology of tropisms in protozoa and plants, and reflexes in animals; the incompleteness of the law of *stimulus* and *reaction* as generally applied in academic psychology and its cause of the failure of academic psychology to understand the personality. The four factors in the law: a, physiological status; b, stimulus; c, autonomic reaction, compulsion to acquire a neutralizing stimulus; d, the neutralizing stimulus and its effect, as the dynamic principle sustaining and determining all behavior. (One hour with animal behavior demonstrations.)

4. The theory of the peripheral origin of the emotions or autonomic affective cravings (hunger, fear, shame, jealousy, sorrow, disgust, love, hate) in the tensions and movements of visceral segments or divisions; supporting facts with demonstrations; the inadequacy of cephalic theory of the origin of the emotions; its misleading influences upon the medical profession and organic neurologizing psychiatry; the tumescence or detumescence of blood vessels, gland cells, and unstriped muscles and their influence upon the affective stream; the influence of segmental and general autonomic tensions upon striped muscle tensions; striped muscle and visceral postures revealing affective traits of the individual, compulsive movements and instinctive or reflex adaptations to the environment. (One hour with laboratory demonstrations in behavior.)

5. The integrative functions of the nervous system; influence upon behavior of antagonistic and allied reflexes, reciprocal inhibition, conflict, suppression, summation; the functional relation of the cerebral, thoracic and sacral divisions of the autonomic apparatus; the integrative value of the cerebrum and cerebellum for the striped muscle system. (One hour.)

6. The postural activity of muscle and nerve; tonus of striped and unstriped muscle (circulatory, respiratory, alimentary, genitourinary systems, endocrine glands); external stimuli and tonus of vital organs and behavior, through genesis of power, courage, recoverability, initiative, selfreliance, relative freedom from fear, apathy, impotence and eccentric compensations; secret defence mechanisms to avoid fear states and fear causes. (One hour.)

7. The reflex functions of the proprioceptive system and the influence of the autonomic apparatus upon striped muscle tonus and muscle sense; the sense of proportions of internal forces and external situations; influence of sense of power and weakness in competition; the measurement of external situations by the amount of muscle force necessary to accomplish a change; the sense of failure, of impracticableness of effort, impotence and eccentric compensation; essential differences between successful and unsuccessful persons and attempts; why one "feels right" and the other "unsafe"; the muscle sense and delusions, illusions, hallucinations. (One hour with laboratory demonstrations.)

8. The law or neutralization of affective cravings and its dynamic influence upon normal and abnormal behavior. (Two hours with laboratory demonstrations of the influence of love, fear, rage, hunger, jealousy, sorrow, upon metabolism, visceral activity and overt behavior to get relief; what constitutes getting relief or satisfaction.)

9. The importance of appropriate external stimuli for the genesis of primary affective cravings; the importance of appropriate physiological conditions for these stimuli; the manner in which this dynamic pressure is valuable to the growth of the personality, the growth of compulsion to understand, use and control the environment in order to make a comfortable biological evolution. The essential differences between healthy and unhealthy personal development; the influence of external beneficent and potentially dangerous stimuli upon the tonicities of vital organs. (One hour with laboratory demonstrations in animals and man, of influence of visual, auditory, olfactory, gustatory and tactile stimuli; loss of love object, acquisition of love object, inability to dominate or avoid hate object; autonomic value of submission and bluffing.)

10. The ways in which striped and unstriped sensorimotor segments or divisions are conditioned to seek or avoid certain contact and distance stimuli; the relations of contact receptors to distance recep-

tors; the influence of these principles upon human behavior and development. (One hour with laboratory demonstrations.)

11. How autonomic segments become conditioned to use certain receptors and types of movement and avoid the use of others in order to dominate the environment and acquire the stimuli which they need; the influence of these factors upon animal and human behavior. (One hour with laboratory and case demonstrations.)

12. How autonomic segments strive against each other or become allied in their struggle for control of the projicient or striped muscle apparatus in order to acquire the external stimuli and postural attitudes which they are conditioned to need. How love, hate, fear, disgust, shame, sorrow, jealousy and hunger may become allied or antagonistic in their influence upon the personality. How this may cause serious visceral distress through influencing spastic tensions. (Two hours with demonstrations of animal and human behavior.)

13. General studies of the influence of rage, fear, sorrow, shame, love, disgust, jealousy, upon the overt behavior and the visceral functions of animals; their effects upon the chemical status of the blood stream, blood pressure, heart rate, local vasodilatation and vasoconstriction, respiration, gastric, colon, renal, and sexual functions.

Physiological influence of painful and pleasant contact and distance stimuli. Pleasant and fearful conceptions or thoughts, postural attitudes and distance stimuli and their influence as stimuli upon the visceral tonicities, blood stream, etc. (Two hours with laboratory demonstrations.)

14. The methods of obtaining affective gratification or neutralization—use of muscle tensions and postures, dominating the environment directly or indirectly in order to obtain appropriate external stimuli, such as social and business situations, substitutions for unobtainable objects; methods of exciting courage, avoiding fear, physiological value of fetiches, symbols, art, rituals, literature, drama, fairy tales, myths, conventions, traditions, friends, enemies; the value of forgetting anesthesias, hyperesthesias, paresthesias, flaccid and spastic functional paralyses, mannerisms, beliefs, obsessions, phobias, personal peculiarities. (One hour.)

15. The mechanisms of affective adjustment—the genesis of affective cravings, affective suppression, repression, compensation, regression, fixation, dissociation, association, summation, progression, sublimation, transference. The physiological manner of their influences upon healthful or unhealthful physiological functions through increasing or decreasing visceral tonicities, tonicities of sphincters, blood supply, nutrition, irritability, worry, restlessness, fatigue, lethargy; their effects upon postural tensions of the striped muscles, the kinesthetic sensory stream, the content of consciousness and impractical or practical behavior. (One hour.)

16. The physiological nature of consciousness or awareness of self and the content of consciousness; consciousness as a state of awareness or reactivity produced by the body reacting as a unity to the sensation producing activity of several or many of its parts; the physiological nature of thought, memory, judgment, common sense, impractical beliefs, illusions, delusions, hallucinations and what influences the individual to accept or change them.

The untenableness of the constricted conception that the brain is the organ of the mind. What is mind? Where located in the brain? The fallacies which arise from reasoning that when the brain is taken out of the body or the brain is diseased in one of many ways the mind is gone. Where is the mind when the blood or skin is taken away? The significance of toxemia of the socalled higher centres with ether and the loss of consciousness.

The neurologist's dread of psychology and psychopathology; the cause of the medical profession's indifferent, pessimistic attitude toward psychopathology, and the utterly degraded position of psychiatry in medicine; the critical importance of the hypothesis that the brain is a means of integrating the organs and tissues of the body into a unity. Where is sensation felt? Where is emotion felt? The psychological significance of referred sensation; the utter folly of trying to explain the mind in terms of the brain or the brain in terms of the mind. (Two hours.)

17. The autonomic affective status of the personality at birth; the sexual evolution and growth of the personality through the prenatal, infantile, preadolescent, adolescent, postadolescent, mature and senescent stages; the ways in which people exert a profound influence upon the growth of the child; how autonomic affective distortions are caused and failure to develop results; the influence upon the sexual functions of love, hate, shame, sorrow, fear, hunger, jealousy; the sexual functions and character formation, marital compatibility and incompatibility. (One hour.)

18. The conditioning influence of associates, through their fears, prejudices, obsessions, jealousies, hates, loves, intrigues, beliefs, upon the child's struggle for selfcontrol; the origin and nature of the ego and its struggle, with its asocial cravings for social esteem; the nature and influence of imitation upon the affective cravings and the growth of the personality; the reflex nature of imitation and the unconscious nature of its reactivity; the universality of imitation; family taboos; family intrigues; competition and inferiority; compensation to avoid failure or avoidance of competition and fear failure; the influence of organic and functional inferiorities upon the struggle for virility and social esteem. (One hour.)

19. The origin and physiological nature of the will to power, the will to be, the will to have as the wish for power, wish to be, wish to have; the popular notion of wishing and wishes; the influence of affective cravings upon fatigability and recoverability; their influence upon maintaining health, upon yielding to shock and infectious diseases, social stresses and disappointments; the mechanisms of the socalled "diseases of the will," neurasthenia, paraphrenia, etc. (One hour.)

20. The ego and its struggle for selfcontrol and domination in the herd; the asocially conditioned segmental autonomic cravings as inferiorities; the persistent and pernicious influence upon behavior and physical comfort of intolerable, unmodifiable

cravings when repressed, when irrepressible, when dissociated, when accepted as irresistible; how intolerable and irrepressible cravings arise in heretofore thoroughly normal people; periodic, acute, chronic cravings. (One hour with clinical material.)

21. The manner in which tabooed cravings influence behavior through fear of loss of selfcontrol; eccentric compensations to control the content of consciousness as the result; the seriousness of eccentric compensations when they become ridiculous or dangerous for society; the varieties of excellent and eccentric methods of controlling cravings; the development of vicious circles of affection; what determines which type is used. (Two hours with illustrations.)

22. The influence of conditioned suppressed and repressed cravings or wishes upon visceral tonicities, overt behavior and the content of consciousness. Laboratory studies by the students upon themselves: 1, The analysis of consistent sensorimotor coordinations, such as obsessions, phobias, compulsions, characteristic attitudes, characteristic use of words, movements, styles of dress, preferences and aversions for literature, methods of working, drama, companions, politics, schools, careers, etc.; 2, the analysis of sensorimotor incoordinations, errors, accidents, misinterpretations, misrepresentations, forgetting; wandering of thoughts, inability to study or remember; causes of loss of selfcontrol, embarrassment, inability to recite or ask questions, or convince others, dreams, etc. (Four hours' laboratory work with discussions).

23. The influence upon thinking and judgment of repressed wishes, and the effort to keep them repressed; the fear of failure, sorrow, shame, jealousy, greed, hate, love, ambition, the compulsion to be submissive in order to win favors, the value of using scapegoats to justify an inferior religious, political, social or scientific position. The psychopath's feelings of inferiority, delusions of persecution and methods of eccentric compensatory striving to dominate. (One hour.)

24. The affective value of dreams, delusions, hallucinations, symbols, mysticism, fetiches, customs, ritual, myths, fancies, conventions, religious and philosophical systems, friendship, flattery, obsessions, compulsions, neuroses, psychoses, mannerisms, etc.; the seductive influence of flattery and false estimations of character for fulfillment of wishes; the criminal's and psychopath's cravings for flattery. (One hour.)

25. The influence of fatigue, toxemia and loss of the love object upon the ego and its power to control the personality's asocial cravings, upon the control of fear and flight in thought and movement, and upon courage; the influence of fear of failure to control a hostile factor, in the environment or the personality, upon visceral tensions and insomnia; what constitutes the unknown in the environment and how it causes a persistent tendency to be uneasy or apprehensive; the influence upon behavior of vicious affective circles, such as fear of what is loved, hate for what is loved; narcissism and the social group; psychopathology of autoeroticism, homosexuality and heterosexual perversions; influence upon character formation; cravings to submit to domination and crime; hate of law and crime. (Two hours with case illustrations.)

26. The influence of secret fears or hates by members of the family upon the child and its development; upon the adult, when the child or adult is the object of fear or hate and can not escape; mechanism and influence of overcompensations of sympathy and flattery, of worry and persecution by parents upon the child's growth; influence of selflove and selfdoubt upon adaptability, the capacity to learn and the development of the personality. (One hour.)

27. The influence of repressed (secret) fear, envy, hate, shame, sorrow, love, upon the endocrine functions and metabolism; hypoadrenism, hyperadrenism, hypothyroidism, hyperthyroidism, glycemia, diabetes, gastric ulcer, hyperchlorhydria, nephritis, respiration, vocal resonance, cardiac rate, rhythm and strength, blood pressure, blood circulation through vasodilatation in some areas and vasoconstriction in others, the malnutrition of certain vital organs, infections of poorly nourished vital organs, dysmenorrhea, amenorrhea, chronic tensions of pylorus, colon, rectum, anus, bladder, larynx, diaphragm and the effect of such tensions upon their functions and behavior; why a certain viscus becomes the field of conflict and others escape. Its vulnerability to infection and destruction. (Two hours with case illustrations.)

28. The origin and nature of neuroses; psychoses as actual neuroses which distort the content of consciousness, selfcontrol and social orientation; the critical and essential differences between pernicious and benign attitudes in the struggle for selfcontrol; the five great types of neuroses and the essential differences between them — suppression neuroses, repression neuroses, compensation neuroses, regression neuroses, dissociation neuroses; mixed types; the factors that determine progressive dementia, that arrest dementia, that contribute to recovery. (Ten to twelve hours with clinical material.)

29. Psychotherapeutic methods; the analytical and reconstructive methods; the hypnotic and suggestive methods. (Two hours with case illustrations.)

30. Critical review of old psychiatric methods and classification systems. The relations of neurology, physiology, surgery and clinical medicine to psychopathology; present state of asylum methods and necessary reforms. (One hour.)

This brief course (fifty-two hours) in psychopathology should give the medical and law student, social worker and nurse sufficient knowledge of human behavior to deal with the milder neuroses and milder cases of abnormal behavior. Those who desire to specialize in psychopathology should by all means become attached to hospitals for mental diseases and fully analyze a series of each type of neurosis. This will require at least two years of hard work.

The course in psychopathology outlined above excludes all those cases of abnormal behavior or insanity which are caused by organic disease of the nervous system such as paresis, arteriosclerosis, brain tumors, encephalitis, etc. Such diseases are essentially diseases of the nervous system and should come under the department of neurology. The unintelligent persistence with which neurology and psychiatry have been allied under one department, with the hopeless subordination of psychiatry, is the cause of the failure to develop psychopathology and the indolent pessimism that now thoroughly dominates the medical profession's interest in crime, abnormal behavior and insanity.

The asylums for the insane contain hundreds of cases of socalled dementia præcox which are curable. I do not maintain that all cases of dementia præcox are curable, but that thousands of young men and women who are merely given custodial care and allowed to grow more abnormal might be cured through psychoanalysis and reeducation.

Further than this, most of these people would never have become insane had the general practitioner had a superficial knowledge of psychopathology. Logically the responsibility for this ignorance reverts back to the prejudices of the medical faculties, trustees, and the editors of our great medical journals who persist in keeping anything that pertains to psychopathology from the medical student and physician on the assumption that it will be of no value to the physician or the patient. This vicious circle has farreaching consequences. The more capable and sincerely interested medical students elect the courses that deal with special fields of medicine and surgery. The internships in hospitals that deal with medicine and surgery are sought after and the leftover appointments go to the more careless, indifferent student. Five years later he is to be found as the custodian of a series of wards in a hospital for the insane with the sum total of drowsy interest in psychopathology limited to a few popular magazines and a big appetite. The indifference of the medical profession to psychopathology permits him to escape all fear of being regarded as professionally inferior or ignorant of the progress of psychopathology and the actual affective problems of his patients. The neurologist's unintelligent assumption that some mysterious cerebral constitutional inferiority is the foundation of the patient's insane behavior encourages this psychiatrist to feel safe in following the line of least effort in his custodial and cathartic duties. This vicious circle must be changed.

The medical schools must institute chairs of psychopathology and teach the principles of psychopathology in a thoroughly broad, carefully conducted course of lectures, laboratory and clinical studies. The keenest medical students should be encouraged to specialize in psychopathology in order to replace the constitutionally indolent minded physicians now left in personal charge of the insane patient. The medical journal must popularize literature pertaining to psychopathology in order that the medical profession will learn to understand and become able to treat neuroses and psychoses in their incipient stages. This will compel the asylum physician to renew his struggle upward in order not to become conscious of too great a sense of inferiority. In turn the state hospitals may yet actually become institutions for the reeducation of distorted people.

100 Central Park South.

STUDIES ON THE ACTION OF VARIOUS SALTS ON THE LIVER AFTER THEIR INTRODUCTION INTO THE DUODENUM.*

By Max Einhorn, M. D.,
New York,
Professor of Medicine at the New York Post-Graduate School.
(*From the Lenox Hill Hospital, New York.*)

About four years ago Meltzer suggested the use of magnesium sulphate injections into the duodenum for the relief of biliary colic. Believing that the colic is caused by a spasm of Oddi's sphincter, Meltzer thought that this remedy, by its relaxing effect, would remove the pain.

Lyon employed magnesium sulphate instillations into the duodenum in order to relax the sphincter of Oddi and at the same time produce (according to the physiological laws of contrary innervation) a contraction and emptying of the gallbladder. He then promulgated this method of magnesium sulphate injection (seventy-five c. c. of a thirty-three per cent. solution) into the duodenum for diagnostic purposes.

In collecting this fluid from the duodenum by siphonage for half an hour or more after the magnesium injection, Lyon believed he was able to obtain the bile separately from the common duct, the gallbladder, and the liver. Lyon (1) expresses himself as follows:

"Before the magnesium sulphate has entirely run in, the tubing is connected to the bottle and gentle aspiration started, and the magnesium sulphate returns at first uncolored, but within one to six minutes, normally, the sphincter is relaxed and the magnesium sulphate becomes tinged with bile, which becomes steadily deeper until pure bile alone is being recovered. When the first bile, which I call A bile, and believe to be that contained in the common duct, plus a few drops from the cystic duct and a few mils perhaps of freshly secreted liver bile passing down the hepatic ducts, deepens to a distinctly deeper golden yellow or becomes in any way off color and of heavier viscosity, this bottle is detached and drainage of this darker bile allowed to continue until the third transition to a much lighter yellow and thinner bile appears, when a final bottle is attached to continue the bile collection to the end of the drainage period.

"The darker bile appearing in the second transition I will call B bile, and believe it to be almost entirely from the gallbladder, mixed, of course, with a few drops or mils of liver bile. . . . The third type, of very light yellow limpid bile which appears in normal cases in the third transition, I will call C bile, and believe it to be bile recently elaborated by the liver cells and freshly secreted. . . . I feel safe in saying that, if carefully done, the majority of A bile is common duct bile, that by far the majority of B bile is derived from the gallbladder, and, if the latter has emptied completely, that practically all of C bile is freshly secreted liver bile."

In this way Lyon thought a refined diagnosis of the different sections of the biliary system could be established. His opinion was based on the observation that, after the instillation of the magnesium salt, the flow of bile changes in character, first flowing light yellow, then dark brown, later on yellow again. The dark bile Lyon considered as coming directly from the gallbladder, the dark color being due to the stay of this fluid in the gallbladder for a longer time and its concentration while there. Many clinicians and surgeons have used the magnesium sulphate test and corroborated Lyon's findings, taking for granted that Lyon's conclusions were correct.

---

*Read before the Clinical Society of the Lenox Hill Hospital, December 10, 1920.

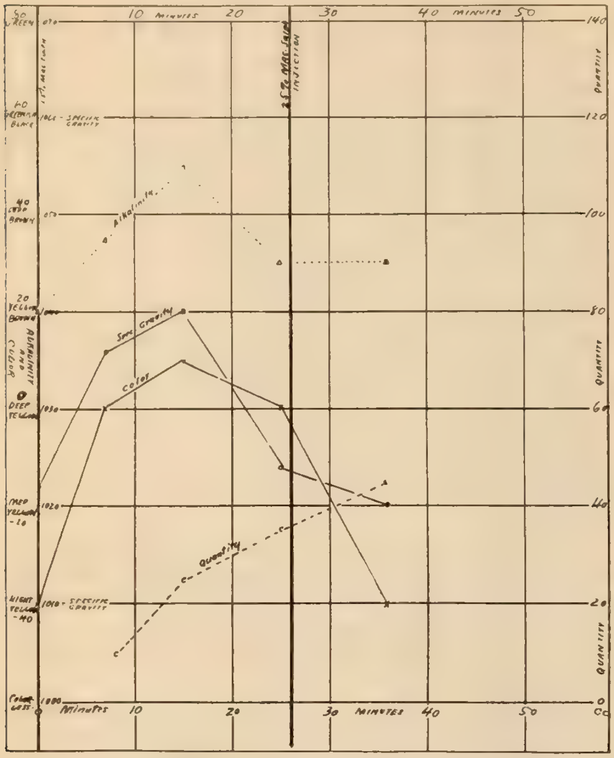


Fig. 1.—Test I, November 13, 1920, magnesium sulphate twenty-five per cent.

If one follows the variations in colors of the duodenal contents after the introduction of the magnesium sulphate, one will observe that the change from yellow to dark brown does not take place abruptly but rather gradually. At first the contents appear light yellow, then they show a deeper yellow, then brown, and ultimately a dark brown color. This acme of the color reactions lasts a few minutes (i. e., the flow continues in about the same shade), when a gradual reverse or a diminution of the color reaction takes place. The change of color this time also does not occur suddenly, but forms a gradual mutation of colors from dark brown to light brown, yellow, and golden yellow.

If these changes in color were due to bile obtained from the different sources, the gallbladder containing the darkest, as Lyon explains, the outpour of the gallbladder bile would have, as its effect, a sudden change in color from the golden yellow to dark brown or almost black, and again after the bladder has emptied itself there would be a sudden return to the original yellow color. This, however, is not the case. With few exceptions, when this color play appears the changes are gradual. This forces us to look for an explanation of these changes somewhere else except in the emptying of the gallbladder, probably in the action of the magnesium sulphate on the liver and its secretion, the bile. In order to investigate these points, a number of experiments were undertaken, which will be recorded in their sequence.

Bile mixed with magnesium sulphate does not change its color; the specific gravity, however, becomes higher. An approximately five per cent. solution of magnesium sulphate in bile gave a specific gravity of 1,055, while the same bile without the sulphate had a specific gravity of 1,013.

Bile mixed with sodium sulphate increases the specific gravity in a minor degree, a five per cent. solution of sodium sulphate in bile gave a specific gravity of 1,030, while the same bile before the addition of the sodium sulphate had a specific gravity of 1,012.

Sodium phosphate hardly changes the specific gravity. Bile with five per cent. sodium phosphate was 1,021, while originally it was 1,012.

The salts were given in different strengths in sixty c. c. doses to patients, injecting them into the duodenum of the same individuals in the fasting condition, on different days.

It was in this way possible to make a comparative study of the action of various salts under similar conditions in the same individuals.

As the number of experiments is quite extensive, I shall select a few characteristic ones for a detailed

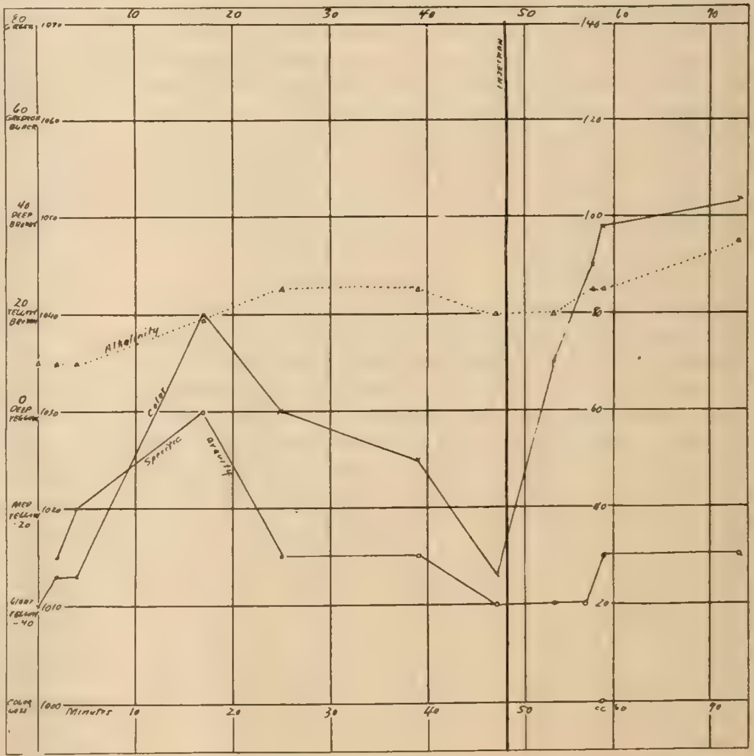


Fig. 2.—Test II, November 17, 1920, sodium sulphate twenty-five per cent.

description, illustrating them in graphs, as follows:

CASE I.—S., with slight atony of the stomach and an apparently normal gallbladder, received the following instillations into the duodenum:

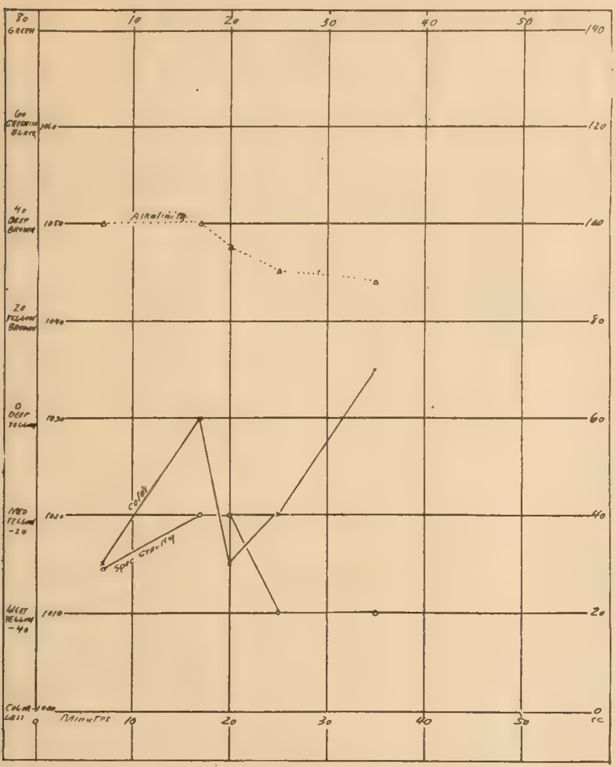


FIG. 3.—Test III, November 16, 1920, sodium phosphate twenty-five per cent.

TEST I, NOVEMBER 13, 1920.

1. Fasting, duodenal contents light yellow, clear, alkalinity 20, specific gravity 1,024, amount ten c. c.

2. Magnesium sulphate, twenty-five per cent. (sixty c. c.), instilled; after seven minutes: dark yellow, with green tinge, clear; ten c. c.; alkalinity, 35; specific gravity, 1,036.

3. After fifteen minutes, dark yellow, with green tinge, clear; 15 c. c.; alkalinity 45; specific gravity 1,040.

4. After twenty-four minutes, dark yellow, clear; ten c. c.; alkalinity 30; specific gravity, 1,034.

5. Magnesium sulphate instillations; repeated ten minutes after the second injection: light yellow; clear; ten c. c.; alkalinity 30; specific gravity, 1,020.

TEST II, NOVEMBER 17, 1920.

1. Fasting, duodenal contents light yellow; alkalinity 10.

2. Sodium sulphate, twenty-five per cent. (sixty c. c.); after two minutes: light canary yellow, clear; alkalinity 10; specific gravity 1,015.

3. After four minutes, canary yellow, turbid; alkalinity 25; specific gravity, 1,015.

4. After seventeen minutes, dark brown yellow, clear; alkalinity 20; specific gravity, 1,030.

5. After twenty-five minutes, light brown yellow, turbid; alkalinity 25; specific gravity, 1,015.

6. After thirty-nine minutes, lighter brown yellow, clear; alkalinity 25; specific gravity, 1,015.

7. After forty-seven minutes, canary yellow; alkalinity 20; specific gravity, 1,010. One minute later a second injection of sodium sulphate, twenty-five per cent., was given.

8. After five minutes, light brown yellow, clear; alkalinity 20, specific gravity 1,010.

9. After ten minutes, darker brown yellow, clear; alkalinity 25, specific gravity 1,010.

10. After eleven minutes, darker brown yellow, clear; alkalinity 25, specific gravity 1,015.

11. After twenty-five minutes, very dark brown yellow, clear; alkalinity 35; specific gravity, 1,015.

TEST III, NOVEMBER 16, 1920.

Sodium phosphate, twenty-five per cent.

1. After seven minutes, very light yellow; tinge of brown, clear; alkalinity 40; specific gravity, 1,015.

2. After seventeen minutes, dark yellow, tinge green, turbid; alkalinity 40; specific gravity, 1,020.

3. After twenty minutes, very light greenish yellow, turbid; alkalinity 35; specific gravity, 1,020.

4. After twenty-five minutes, light brown yellow, turbid; alkalinity 30; specific gravity, 1,010.

5. After thirty-five minutes, light yellow brown, clear; alkalinity 30; specific gravity, 1,010.

CASE II.—Mrs. F., diagnosis duodenal ulcer and chronic cholecystitis.

TEST I, NOVEMBER 4, 1920.

Magnesium sulphate, twenty-five per cent.

1. Fasting, light yellow, turbid; two c. c. A, 6; S, 1; T, 1.

2. After five minutes, light golden yellow, clear; two c. c.; alkalinity 20.

3. After eight minutes, dark yellow, turbid; three c. c.; alkalinity 20.

4. After thirteen minutes, dark brown, almost black, turbid; twenty-five c. c.; alkalinity 30, specific gravity 1,030.

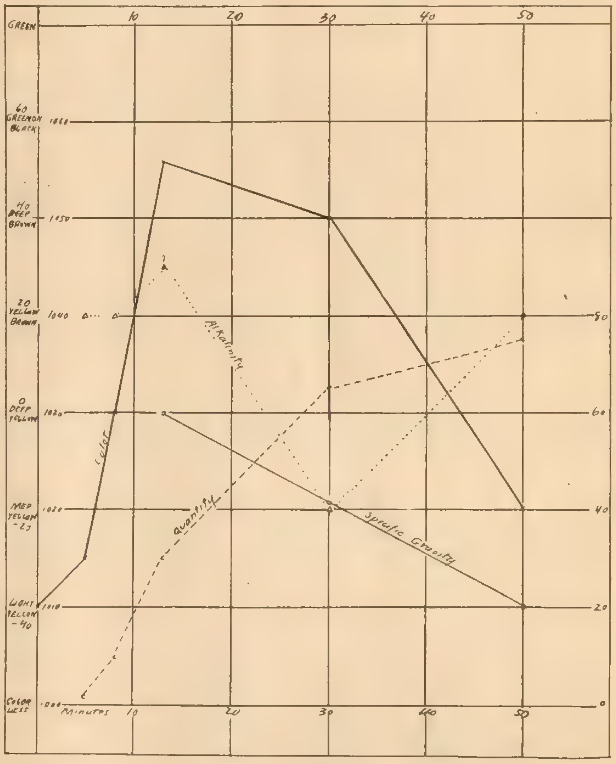


FIG. 4.—Mrs. F., December 4, 1920, magnesium sulphate twenty-five per cent.

5. After thirty minutes, muddy brown, very turbid; thirty-five c. c.; hydrochloric acid +.

6. Light golden yellow, clear; ten c. c.; alkalinity 20, specific gravity 1,010.

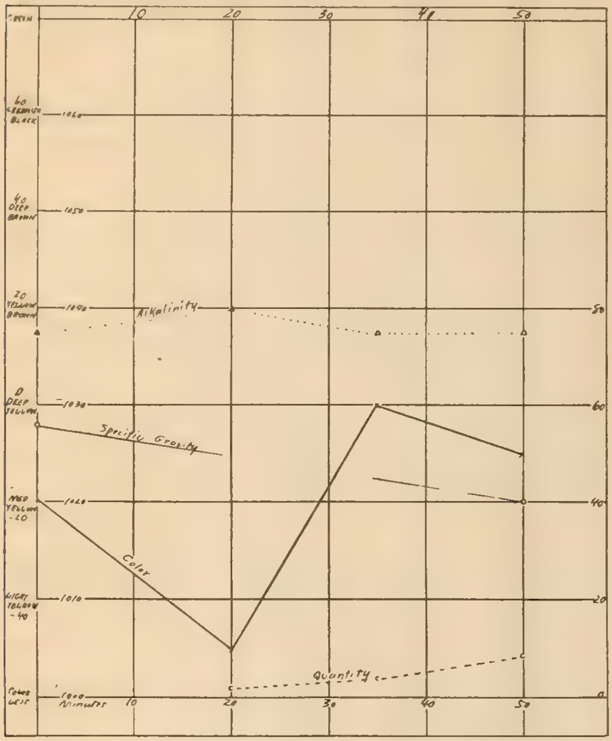


Fig. 5.—Mrs. F., December 25, 1920, sodium phosphate twenty-five per cent.

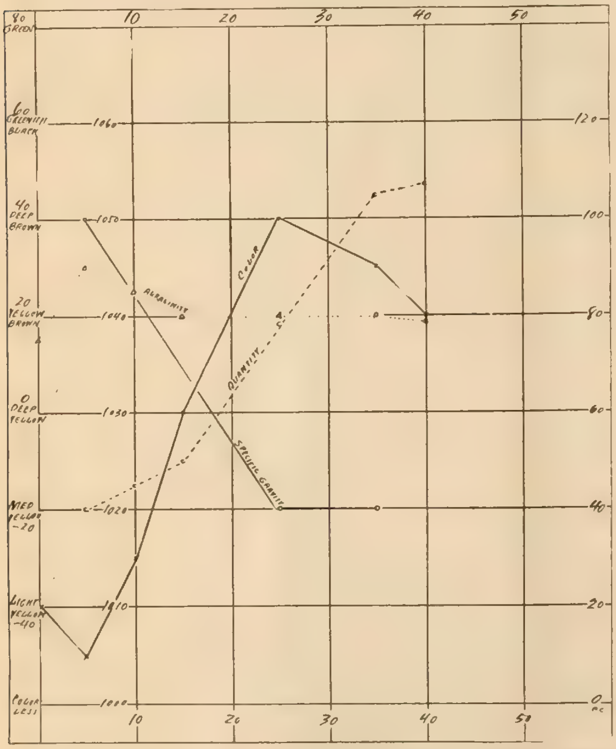


Fig. 6.—Mrs. F., December 6, 1920, magnesium sulphate thirteen per cent.

TEST II, DECEMBER 25, 1920.

Sodium phosphate, twenty-five per cent.

1. Fasting: golden yellow, turbid; ten c. c.; alkalinity 15, specific gravity 1,028.

2. After twenty minutes, watery, clear, tinge of yellow; two c. c.; alkalinity 20.

3. After thirty-five minutes, dark yellow, slightly turbid; two c. c.; alkalinity 15.

4. After fifty minutes, dark lemon yellow, turbid; five c. c.; alkalinity 15, specific gravity 1,020.

TEST III, DECEMBER 6, 1920.

Magnesium sulphate, thirteen per cent.

1. Fasting: light canary yellow, turbid; two c. c.; alkalinity 15.

2. After five minutes: watery, tinge of yellow, clear; forty c. c.; alkalinity 30, specific gravity 1,050.

3. After ten minutes, light golden yellow, clear; five c. c.; alkalinity 25.

4. After fifteen minutes, dark golden yellow, turbid; five c. c.; alkalinity 20.

5. After twenty-five minutes, dark muddy brown, turbid; thirty c. c.; alkalinity 20, specific gravity 1,020.

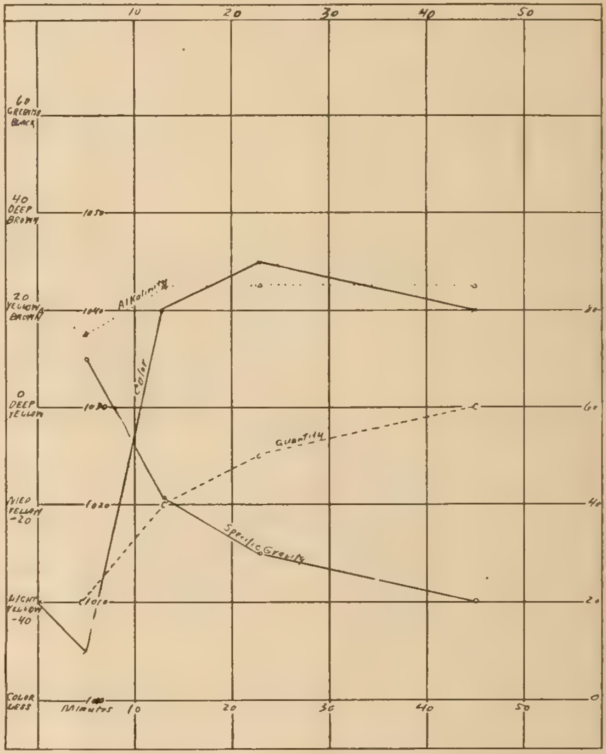


Fig. 7.—Mrs. F., December 5, 1920, magnesium citrate thirteen per cent.

6. After thirty-five minutes, dark muddy brown, turbid; twenty-five c. c.; alkalinity 20, specific gravity 1,020.

7. After forty minutes, dark yellow brown, turbid; twenty c. c.; alkalinity 20.

TEST IV, DECEMBER 5, 1920.

Magnesium citrate, thirteen per cent.

1. Fasting: very light yellow, turbid; one c. c.; alkalinity 20.

2. After five minutes, light straw yellow, turbid; twenty c. c.; alkalinity 25, specific gravity 1,020.

3. After thirteen minutes, muddy brown, turbid; twenty c. c.; alkalinity 25, specific gravity 1,020.

4. After twenty-three minutes, muddy dark brown, turbid; ten c. c.; alkalinity 25, specific gravity 1,015.

5. After forty-five minutes, dark yellow brown; turbid; ten c. c.; alkalinity 25, specific gravity 1,010.

TEST V, DECEMBER 12, 1920.

Witte's peptone, five per cent. (sixty c. c.).

1. Fasting: watery, tinge of yellow, turbid; two c. c.; alkalinity 10.

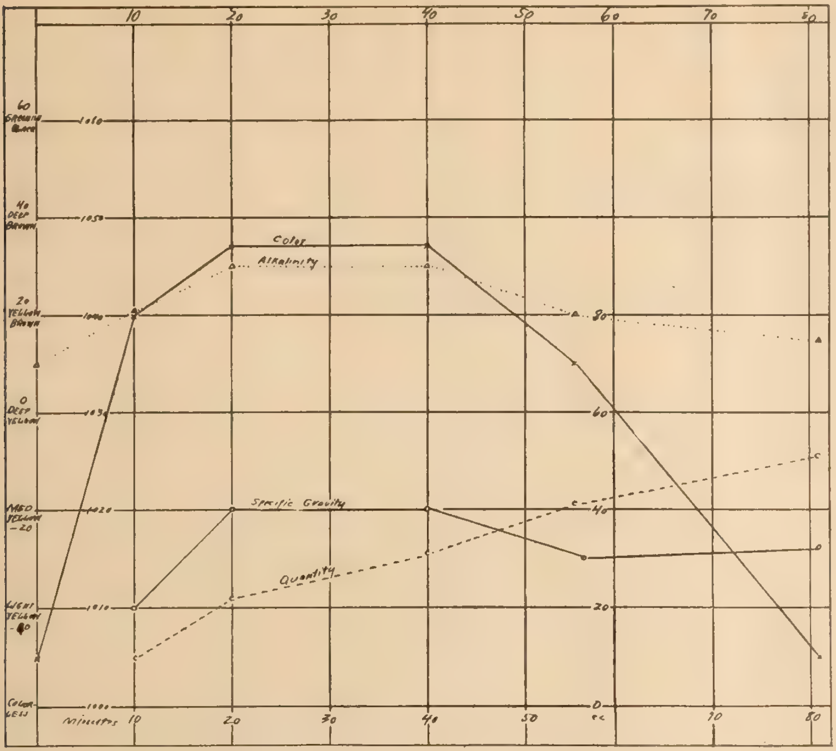


FIG. 8.—Mrs. F., December 12, 1920, Witte's peptone five per cent.

2. After ten minutes, dark brown yellow, turbid; ten c. c.; alkalinity 20, specific gravity 1,010.

3. After twenty minutes, muddy brown, turbid; eleven c. c.; alkalinity 30, specific gravity 1,020.

4. After forty minutes, muddy brown, turbid; ten c. c.; alkalinity 30, specific gravity 1,020.

5. After fifty-five minutes, dark yellow, brownish tinge, clear; ten c. c.; alkalinity 20, specific gravity 1,015.

6. After eighty-one minutes, straw yellow, clear; ten c. c.; alkalinity 15, specific gravity 1,016.

CASE III.—Mr. S. Diagnosis: chronic enteritis and probable cholecystitis; magnesium sulphate twenty-five per cent., November 8, 1920.

1. Fasting: yellow, turbid; alkalinity 15.

2. After three minutes, yellow, very slightly turbid; fifteen c. c.; alkalinity 20, specific gravity 1,020.

3. After nine minutes, dark green yellow, slightly turbid; thirty c. c.; alkalinity 50, specific gravity 1,065.

4. After forty-three minutes, dark green yellow; fifteen c. c.; alkalinity 35, specific gravity 1,030.

5. Ten minutes after second injection, light yellow, clear; forty c. c.; alkalinity 30, specific gravity 1,020.

CASE IV.—Mrs. D. Diagnosis, chronic cholecystitis; magnesium sulphate, twenty-five per cent.; November 13, 1920.

1. Fasting: yellow brown, slightly turbid; alkalinity 25.

2. After five minutes, straw yellow, tinge of green, clear; alkalinity 25.

3. After fifteen minutes, golden yellow, brown, clear; alkalinity 30.

4. After twenty minutes, light yellow brown, clear; alkalinity 35.

5. After twenty-five minutes, lighter yellow, brown, turbid; alkalinity 35.

6. After thirty minutes, yellowish, deep brown, turbid; alkalinity 45.

7. After thirty-five minutes, light yellow brown, turbid; alkalinity 30.

8. After forty minutes, deep straw yellow, turbid; alkalinity 20.

9. After forty-five minutes, light brown yellow; alkalinity 20.

10. Five minutes after second injection, straw yellow, clear; alkalinity 25.

11. After ten minutes, dark brown yellow, clear; alkalinity 30.

12. After fifteen minutes, light brown yellow, clear; alkalinity 20.

13. After twenty minutes, lighter brown yellow, clear; alkalinity 20.

The changes regarding the specific gravity as described in bile mixtures with salts are found in the duodenal contents after the instillation of the respective salts (in concentrated form) into the duodenum. The color changes are encountered

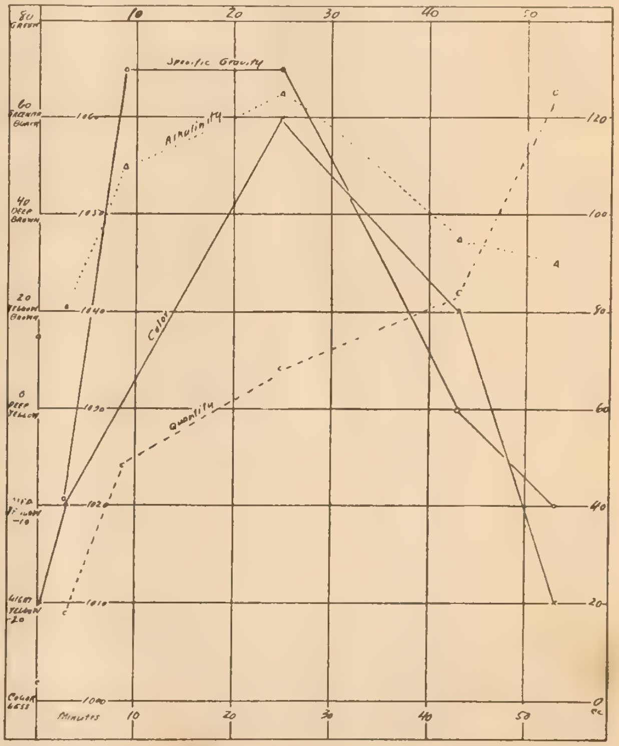


FIG. 9.—Mrs. S., November 8, 1920, magnesium sulphate twenty-five per cent.

after the instillation of concentrated magnesium sulphate and sodium sulphate solutions into the duodenum, indicating that the color reaction is not due to the relaxing effect of the magnesium, for then sodium would fail to do it. It appears that the sulphate part of the salt (magnesium, sodium) is in part the instigator of the color reaction, although there are other substances which do the same. It is probable that the sulphates, when excreted by the liver with the bile, undergo the changes in color as described.

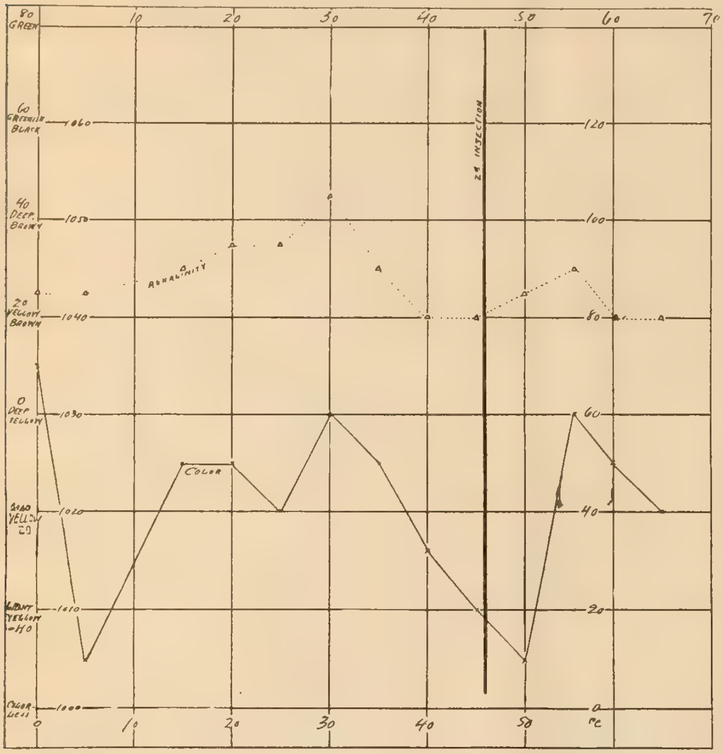


Fig. 10.—Mrs. D., November 16, 1920, magnesium sulphate twenty-five per cent.

Next to these substances the high concentration of the salts introduced may have something to do with the increased outflow of bile and other juices. The former causes a disturbance in the normal salt level of the blood and provokes a defensive action in the neighboring organs to counterbalance the evils. Thus the liver, pancreas, duodenum, and probably also the stomach are brought to increased functional activities.

The view that the sulphites play a part is substantiated by the fact that sodium phosphate and bicarbonate of soda in the same concentration fail to produce the same play of colors as the sulphates.

Another proof of the truth of this theory is found in the fact that a repetition of the magnesium sulphate does, immediately after the effect of the first instillation has passed, bring on a repetition of the various colors of the duodenal contents, in a manner similar to the first injection. This cannot be explained by an emptying of the gallbladder, as this organ has not been given a chance to fill up after the first experiment.

Magnesium citrate, ten to thirteen per cent. solution instilled into the duodenum, has less effect upon the yellow color of the bile, i. e., it does not grow darker or it does so in a much less degree. This also shows that the dark color obtained after the magnesium sulphate is not due to the magnesium but to the sulphate; or, that the magnesium which should open and empty the gallbladder is not its cause, but something else.

The amount of magnesium or sodium sulphate or its concentration in the fluid has likewise an influence on the degree of the color changes of the returning bile and its specific gravity. In other words, the higher the percentage of the salts, the more intense the color at its acme and the higher the specific gravity. This can be explained by the action of these salts on the liver, but not by an opening up of the gallbladder, for then the gallbladder bile would always appear in the same state and not in variations.

I have also tried to study the effect of magnesium sulphate upon patients whose gallbladders have been removed. In some of them I could observe a similar color play after the magnesium sulphate instillation.

Case I.—Mrs. K., with cholecystectomy; mag-

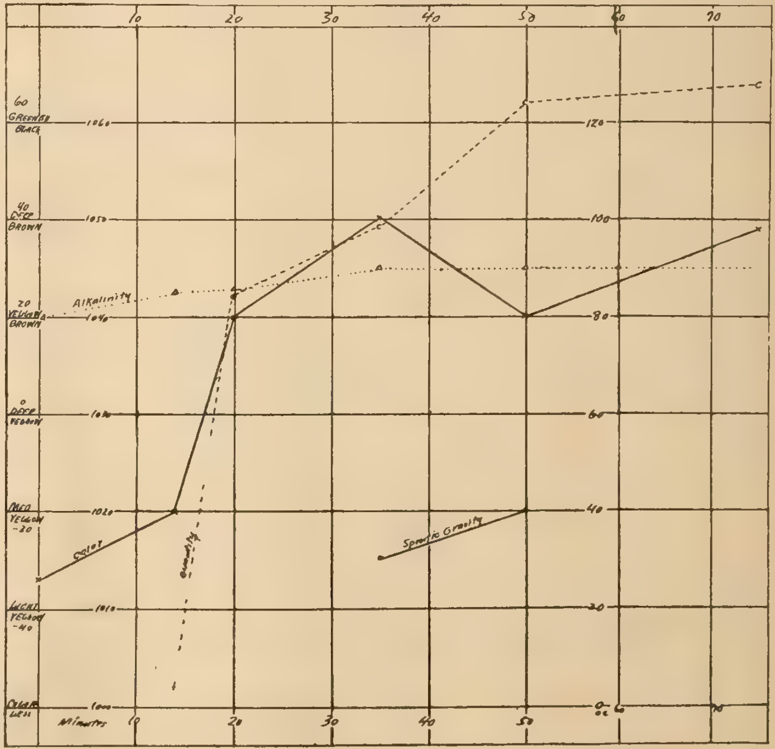


Fig. 11.—Mrs. K. with cholecystectomy, December 1, 1920, magnesium sulphate twenty-five per cent.

nesium sulphate, twenty-five per cent; December 1, 1920. Test I:

1. Fasting: light yellow green; slightly turbid; alkalinity 20; two c. c.; A, 6; S, 1; T, 4; (iron pigment found microscopically).

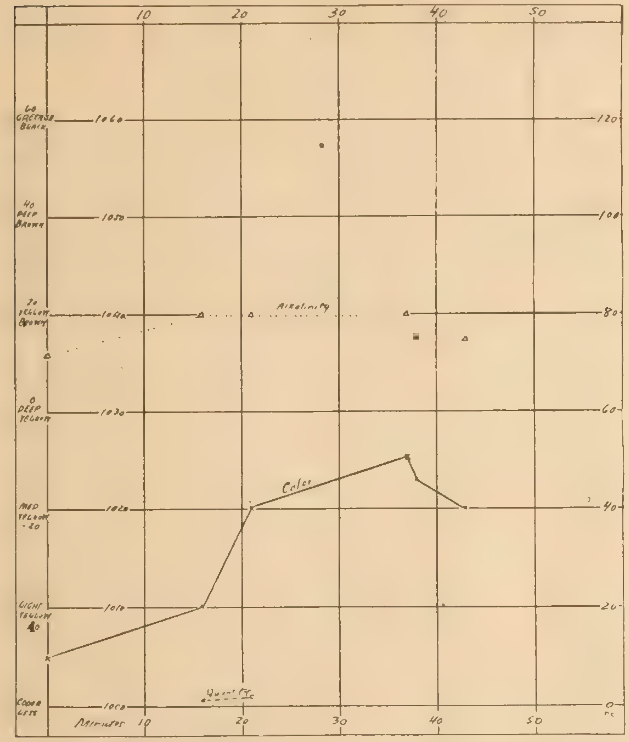


FIG. 12.—Mrs. K. with cholecystectomy, December 4, 1920, sodium sulphate twenty-five per cent.

2. After fourteen minutes, golden yellow, turbid; alkalinity 25; four c. c.

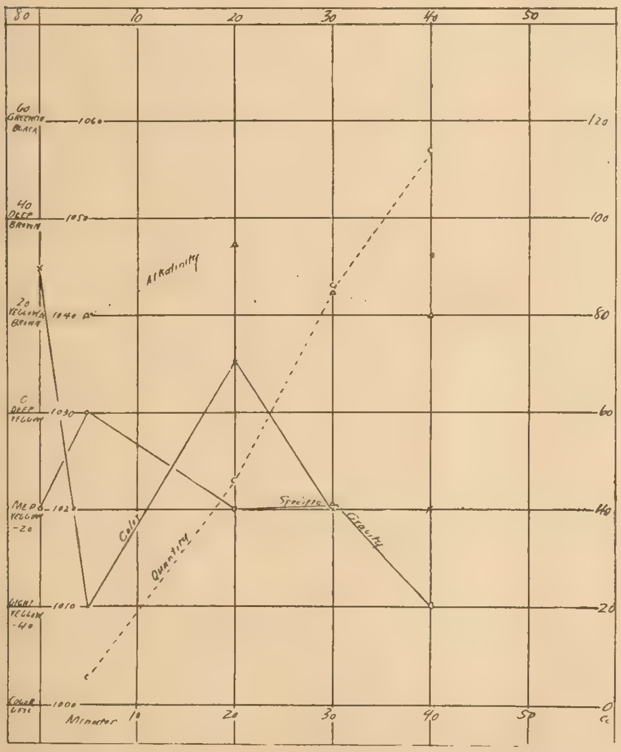


FIG. 13.—Mrs. R. with cholecystectomy, December 5, 1920, magnesium sulphate twenty-five per cent.

3. After twenty minutes, very light brown yellow, clear; eight c. c.; alkalinity 25.

4. After thirty-five minutes, shade darker brown yellow, turbid; specific gravity 1,015; alkalinity 30; fifteen c. c.

5. After fifty minutes, shade lighter brown yellow, clear; alkalinity 30, specific gravity 1,020; twenty-five c. c.

6. After seventy-five minutes, shade darker brown, yellow, clear; alkalinity 25; four c. c.

Test II: Sodium sulphate, twenty-five per cent.

1. Fasting: greyish tinge of yellow, turbid; alkalinity; one half c. c.

2. After sixteen minutes, light golden yellow, clear; alkalinity 20; one c. c.

3. After twenty-one minutes, light golden yellow, clear; alkalinity 20; one c. c.

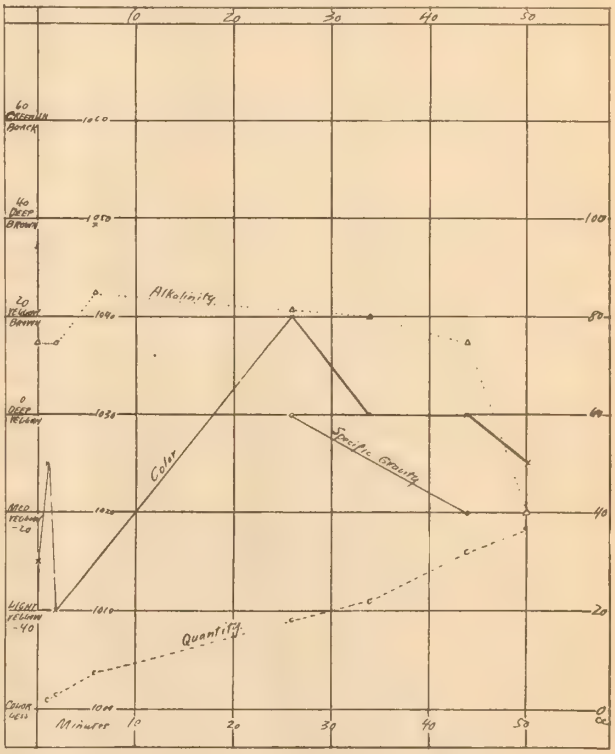


FIG. 14.—Mrs. G. with cholecystectomy, December 8, 1920, magnesium sulphate twenty-five per cent.

4. After thirty minutes, shade darker golden yellow, clear; alkalinity 20; four c. c.

5. After thirty-eight minutes, shade lighter golden yellow, clear; alkalinity 15; two c. c.

6. After forty-three minutes, light golden yellow, turbid; alkalinity 15; three c. c.

CASE II.—Mr. R., with cholecystectomy; magnesium sulphate, twenty-five per cent.; December 5, 1920.

1. Fasting: light muddy brown, turbid; alkalinity 20, specific gravity 1,020; ten c. c.; A, 8; S, 1; T, 2.

2. After five minutes, light yellow, clear; alkalinity 20, specific gravity 1,030; six c. c.

3. After twenty minutes, light yellow brown; alkalinity 35, specific gravity 1,020; forty c. c.

4. After thirty minutes, golden yellow, turbid; alkalinity 25, specific gravity 1,020; forty c. c.

5. After twenty minutes, golden yellow, turbid; alkalinity 20, specific gravity 1,010; thirty c. c.

CASE III.—Mrs. G., with cholecystectomy; magnesium sulphate, twenty-five per cent.; December 8, 1920.

1. Fasting: dark greenish yellow, turbid; alkalinity 15; five c. c.; A, 12; S, 2; T, 1.

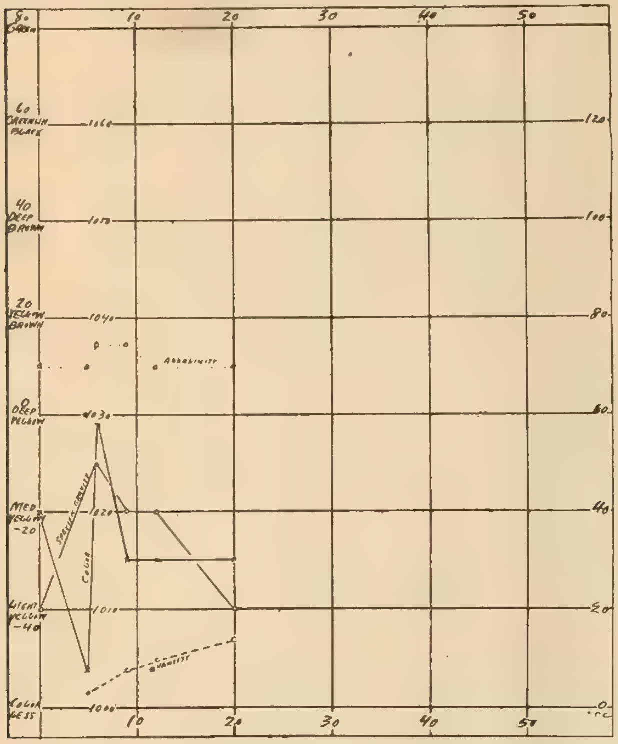


FIG. 15.—Mrs. W. with cholecystectomy, December 16, 1920, magnesium sulphate twenty-five per cent.

2. After one minute, magnesium sulphate; dark brown yellow, clear; alkalinity 15; two c. c.

3. After two minutes, light yellow, slightly turbid; alkalinity 15; one c. c.

4. After six minutes, dark brown, turbid; alkalinity 25; five c. c.

5. After twenty-six minutes, dark yellow green, turbid; alkalinity 20, specific gravity 1,030; ten c. c.

6. After thirty-four minutes, light green yellow; alkalinity 20; four c. c.

7. After forty-four minutes, dark brown yellow, turbid; specific gravity 1,020, alkalinity 15; ten c. c.

8. After fifty minutes, dark yellow green clear; hydrochloric acid +10, acidity 20; five c. c.

CASE IV.—Mrs. W., with cholecystectomy; magnesium sulphate, twenty-five per cent.; December 16, 1920.

1. Fasting: golden yellow, turbid; alkalinity 10, specific gravity 1,010; four c. c.

2. After five minutes, watery, tinge of yellow, alkalinity 10, specific gravity 1,030; three c. c.

3. After six minutes, dark yellow, clear; alkalinity 15, specific gravity 1,025.

4. After nine minutes, canary yellow, turbid; alkalinity 15, specific gravity 1,020; five c. c.

5. After twelve minutes, canary yellow, turbid; specific gravity 1,020, alkalinity 10; two c. c.

6. After twenty minutes, canary yellow, turbid; alkalinity 10, specific gravity 1,010; four c. c.

Stepp has recommended Witte's peptone in five per cent. solution for the same purpose that Lyon used the magnesium sulphate. By injecting sixty c. c. of the peptone solution into the duodenum, the bile outflow resembles very closely that after the magnesium sulphate. Here too the color play appears gradually and not abruptly.

We give in the following the curve of the peptone action in Mrs. F. which can be compared with the curves of the same patient after magnesium sulphate and the other salts. As the peptones do not greatly increase the specific gravity of solutions, the returning bile after its injection does not show a rise in the specific gravity curve. It appears plausible to assume that the peptone acts in a similar manner as the salts, stimulating the liver and the duodenum to increased activity.

The increase in dark color after the magnesium sulphate follows a certain curve, gradually increasing in intensity until it reaches its acme, then slowly decreasing until there is a return to the usual yellow color or a lighter yellow. Sometimes at this point there is another rise and fall in the color reaction for a while. The color reaction in the bile after magnesium sulphate instillation into the duodenum is not equally pronounced in everybody. In some the reaction appears strongly, in others weakly and in others not at all.

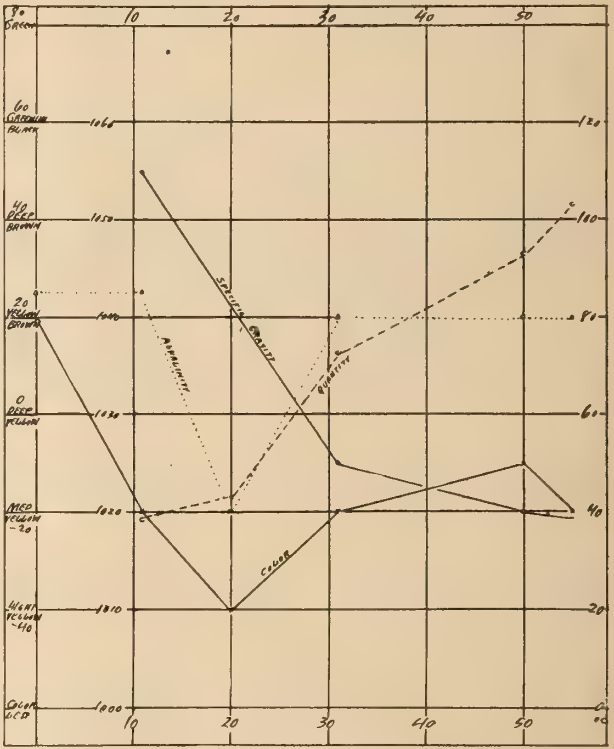


FIG. 16.—Mrs. W., December 2, 1920, magnesium sulphate twenty-five per cent.

This variability appears to be dependent upon the activity of the liver (or its power of working up and eliminating the sulphates and other ingredients with bile). Perhaps this salt, magnesium or the sodium sulphate, could be used as a functional test of the liver. With this object in view the magnesium sulphate was instilled into the duodenum in two cases of severe liver trouble; one patient with hypertrophic cirrhosis of the liver and ascites, the other with pronounced enlargement of the liver and ascites, due to cardionephritis. In neither of these patients did the brown color of the sulphate appear, although the specific gravity of the bile became higher, as the following record shows.

Case I.—Patient E., cirrhosis of the liver; December 2, 1920; magnesium sulphate, twenty-five per cent.

1. Fasting: dark brown, clear; two c. c. alkalinity 25, A, 12; S, 1; T, 2.
2. After eleven minutes, golden yellow, clear; forty c. c., alkalinity 25, specific gravity 1,055.
3. After twenty minutes, canary yellow, turbid; three c. c.; hydrochloric acid+acidity 20.
4. After thirty-one minutes, golden yellow, clear; thirty c. c.; alkalinity 20, specific gravity 1,025.
5. After fifty minutes, golden yellow, shade darker, clear; twenty c. c.; alkalinity 20, specific gravity 1,020.
6. After fifty-five minutes, golden yellow, shade lighter; ten c. c.; alkalinity 10, specific gravity 1,020.

Another patient with chronic advanced myocarditis and swollen liver (Mr. K.) was examined by the magnesium sulphate test and gave a similar result. In two other patients with enlarged livers the magnesium sulphate produced either no reaction or a very weak one. At any rate it seems worth while to investigate this subject more thoroughly.

Therapeutically the beneficial action of the saline aperients on the liver is well established. By the studies described above the efficacy of the magnesium and sodium sulphates in liver disturbances becomes more clear. These salts seem to stimulate this organ. The aperient waters are ordinarily taken by mouth. Would they not manifest quicker and better action when instilled directly into the duodenum? This is another problem worthy of investigation.

Before closing I wish to express my gratitude to the following physicians who either permitted me to examine their patients or assisted in the work: Dr. Willy Meyer, Dr. Herbert W. Meyer, Dr. Franz Torek, Dr. Carl Eggers, Dr. Leo Spigel, Dr. Girard F. Oberrender, Dr. Bockus, and Dr. H. A. Rafsky.

REFERENCES.

1. Lyon, B. B. V.: Choledochitis, Cholecystitis, and Cholelithiasis, New York Medical Journal, July 3 and 10, 1920.

Mononuclear Leucocytosis in Reaction to Acute Infections.—Sprunt and Evans (*Bulletin of the Johns Hopkins Hospital,* November, 1920) describe six cases of a mononuclear leucocytosis in young adults, occurring in reaction to acute infections. The symptoms, physical examination and blood findings, are so similar that they form a fairly well defined clinical syndrome. During the febrile period, in the early stages, these cases are difficult to differentiate from leucemia, but subsequently the diagnosis is made clear, and the prognosis in the six cases reported was good. The mononuclear leucocytosis in these young adults differed from that observed in children in that it is not a simple lymphocytosis, but is made up largely of pathological forms, probably all lymphoid in origin.

ILEOCOLOSTOMY AND EXCLUSION IN DILATATION OF CECUM AND COLON.

Large Hypertrophic Dilatation of the Cecum, Ascending Colon and a Large Part of the Transverse Colon; Ptosis of the Transverse Colon; Dyspeptic Phenomena and Gastralgic Attacks.

By H. Illoway, M. D.,
New York.

Case I.—Mrs. D. W., referred on April 22, 1909; aged twenty-nine years; married, with five children. The patient was five feet four inches in height; her usual weight was 160 pounds, now 142 pounds. She was nursing her baby and had had him at the breast all night. She had enjoyed good health until April 5th. On that day she felt badly, was nauseated, vomited several times, and had some fever. A physician was called, who found that she had a temperature of 104° F. She had been confined to her bed for several days. On April 17th she had a similar attack, with a temperature of 103°, and since then she had felt a soreness in the epigastrium and had no appetite. She had always been a moderate eater. Her breakfast consisted of an orange, two soft boiled eggs, oatmeal, a roll or bread and butter, and a cup of milk or coffee. Her dinner consisted of meat, potatoes and dessert; supper, salt herring, two soft boiled eggs, a cup of milk, and bread and butter. Between meals and before retiring at night she took a cup of milk, and she drank three or four glasses of cool water a day. Her bowels moved regularly; she had a daily but insufficient movement. She had suffered from headache only during the past few days. She slept well.

Examination.—From the xiphoid to the umbilicus, fifteen and one half centimetres. In the region of the epigastrium nothing abnormal was revealed by inspection or palpation. There was no sensitiveness to percussion (with hammer and pleximeter), but there was sensitiveness to firm pressure in the median line at a point seven centimetres from the xiphoid; no splashing. Water, eight ounces; no splashing, no sound. Liver, spleen and kidneys were *in situ normale.* In the abdomen there was nothing abnormal to inspection or palpation; no panniculus; no sensitiveness anywhere (especial attention given to this point in examination). The tongue was flat, pale, white coated, with some elevated papillæ at the tip.

December 16, 1909.—She was to have come for a test breakfast, the day after the history given above was taken, but, not feeling very strong at the time, she put it off for a few days and then went to the country. On her return home in September she weighed 154 pounds. On December 16th she weighed 140¼ pounds, a loss of nearly fourteen pounds in about three months. She complained of pain, a cramp in her back, which was so severe that when it occurred she could not talk or move; it usually lasted about ten minutes. The day before she had had it twice. At first it came on only after eating certain articles of food that frequently disagreed with her; later it came on if she ate to satiety, though at times it came on after a light breakfast. Changes in the weather made no difference. She emphasized this point because she suffered from muscular rheumatism and was aware of the influence of atmospheric changes. For the past two months she had confined her food to milk, cereals and buttered toast, but she felt just as badly. Her bowels were constipated, tongue pale, flat and white coated, with some elevated papillæ at the tip.

December 17, 1909.—Test breakfast (Ewald and Boas); one hour; tube, extracted six ounces of stomach contents; bread and fluid, the bread well worked up. The whole had a yellowish tint. Reaction, blue litmus +; reaction, Congo, +; phloroglucin, Van, +; free hydrochloric acid, fifteen; total acidity, thirty-seven. After the extraction, I gave her eight ounces of milk and a large slice of buttered white bread; forty-five minutes later I again examined her epigastrium. Sensitiveness was noted in the median line from the xiphoid to the crease, diminishing in intensity as it went down; not marked in any region. No splashing, no sound. There was no sensitiveness anywhere in the abdomen. A diagnosis was made of slight, subacute gastritis, deficient hydrochloric acid and pepsin, with costiveness. Treatment consisted of dietary directions as to food articles and their preparation, with medication, consisting of five drops of dilute hydrochloric acid in half a glass of water with her dinner in the evening; a mixture of tincture of nux vomica and Fowler's solution after breakfast and lunch; a pancreopepsin tablet with each meal; after dinner, in the evening, and before going to bed, a cup of tea made from chamomile flowers and flavored with a little dried orange peel.

January 17, 1910.—For about ten days she was free from pain. On the Saturday night previously, she had had a rather severe attack of pain; on January 16th another but a much milder one. This pain occurred most frequently when her bowels were costive. It never came on while she was lying in bed; in fact, when she lay down the pain always disappeared. She had eaten according to the directions given her; her tongue was clean; her weight was 138 pounds. She was given an abdominal massage and instructed to take some tonic douches (hot and cold showers alternately) at a hydropathic institute, and was told to take a half ounce of malt with hypophosphites three times a day.

February 1, 1910.—The patient reported relief from pain. Her bowels had moved regularly since she had taken the malt. She felt very weak, however; was depressed and downhearted. As she felt better after the douches she was told to continue them, and also to continue the malt and hypophosphites, but to discontinue the mixture of nux vomica and Fowler's solution. She was given instead a mixture of strychnine with dilute phosphoric acid and tincture of cinchona compound and ethereal tincture of valerian, to be taken three times a day.

April 30, 1910.—On this date she reported that one of her children had been sick with scarlet fever and she had not been able to get out of the house for two months. She was five months pregnant. She had no appetite, and three or four days previously had had a recurrence of the pain. It came on after a dinner with some friends, where, in all probability, the food was too rich. The next day she noticed a little red blood in the stool. An examination of the anus disclosed a small fissure, to which ichthyol was applied. I directed her attention once more to the dietary directions, and prescribed essence of pepsin, with the addition of a little diluted hydrochloric acid, and told her to continue the chamomile tea.

October 19, 1910.—She was delivered two months previously to this date, after a normal labor, of a living, healthy child. For four weeks she had pain in the epigastrium, very severe for the past week. When it came on it usually lasted a whole day, and occasionally two days. She had a bitter taste in her mouth, and her tongue was covered with a white coat. There was no soreness to percussion in the median line from the xiphoid down nine and one half centimetres. I prescribed five grains of bismuth subnitrate, three times a day after meals, and malt after dinner and before going to bed. Vegetables were excluded from her diet, and for dinner she was directed to eat chicken with farina or boiled rice. The chamomile tea was continued.

May 31, 1911.—On this date she reported she had had the cramps twice, both times during the morning hours. The pain started in her back, ran around to the left hypochondrium and down into the left lumbar and inguinal regions. Her bowels were regular, but she was much troubled with flatus. Examination revealed marked sensitiveness in the right half of the abdomen about the crest of the ilium, just above the beginning of the linea spinaumbilicalis dextra. She weighed 138¼ pounds.

June 1, 1911.—Test breakfast; one hour; tube, sixty cubic centimetres; stomach contents, bread and fluid; ordinary appearance, bread well worked up. Reaction, blue litmus +, Congo +; phloroglucin, Van, +; free hydrochloric acid, eleven; total acidity, thirty-two; microscopic examination, negative. The strychnine and cinchona mixture was continued, but the dilute phosphoric acid was changed to dilute hydrochloric acid, and fluid extract of caraway was added as a carminative, as well as pancreopepsin tablets to be taken with meals. In the case of much flatulence, two five grain tablets of asafœtida were to be taken three times a day. The patient brought a specimen of urine from a sixteen hour collection. Its appearance was slightly turbid, otherwise there was nothing unusual about it except its high specific gravity, 1,032; there was no albumin and no sugar.

June 2, 1911.—The patient telephoned that she was suffering from great pain in the bladder and was obliged to urinate every few minutes. The following was prescribed, to be taken every two hours:

Morphin. acetatis,	gr. i
Potass. acetatis,	gr. x
Liquor ammon. acetatis,	ʒi

June 5, 1911.—The patient came in on this date. The bladder pains had been quickly relieved, but the cramps had recurred four times during the week. As she complained that the pepsin tablets caused constipation, she was told to discontinue them and to take instead one dram of essence of pepsin after dinner and supper. For the cramps, which I regarded as gastralgia, I prescribed five grains of bismuth subnitrate after each meal, and told her to continue the tonic. If greatly constipated she was to take one half to one teaspoonful of olive oil three times a day with her meals.

August 6, 1911.—The patient had been in the Catskill mountains for some weeks, but on the Wednesday preceding this date she had had an attack of indigestion. She had eaten her dinner at noon, and in the afternoon she drank some apple cider. About six p. m. she was seized with a severe pain in the left hypochondrium and the left half of her back. She obtained no relief from any of the usual household remedies, such as poultices and enemas, until she vomited. Her bowels were very costive, and since June some mucus was passed with each movement. She was feeling better, however, and I told her to continue her diet as directed and to take the essence of pepsin with the hydrochloric acid alternately with the pancreopepsin tablets. For the costiveness she was given a phenolphthalein tablet. In case the cramps recurred she was told to take a teaspoonful every hour or two of a mixture of rhubarb and soda, ten drams, and Hoffman's anodyne, two drams.

October 24, 1911.—She again complained of pains in her back, which she believed were due to indigestion and brought on by errors in diet. Her weight was 130¼ pounds. Her epigastrium was sensitive at the xiphoid and down the median line four centimetres. Her right ovary was enlarged and sensitive to pressure. She was put on a vegetarian diet with milk and eggs included. She was given the following prescription and told to report at the end of the week:

Bismuth subnit., ...gr. viii
Orthoform, ...gr. v
Anesthesin, ...gr. v
M. ft. talis pulv. No. x.
Sig. One powder three times a day half an hour before meals.

October 27, 1913.—The patient came in on this date. She had spent the summer months at Bradley Beach, N. J., where she had had an attack of colic, and since then had not been well. Before the attack she weighed 145 pounds; now she weighed only 135. During the past year she had been subject to peculiar attacks. Without preliminary symptoms or warning of any kind, her bowels would move; there would be three or four very large watery movements. With the onset of the first movement she would collapse and fall in a faint. These attacks were not attended by either pains or cramps. She had had four such attacks in the course of the year, the last one being on October 22, 1913. With the previous attacks she had not been conscious of any indiscretions in diet that could have caused them, but the last one she thought might have been brought on by eating a raw pear in the morning and some grapes in the afternoon. The diarrhea had set in toward evening and the skins of the grapes were passed in the stools. Usually her bowels moved every day, but insufficiently. An examination of the epigastrium showed some sensitiveness in the median line from the xiphoid to the umbilicus, and over the lower half of the right hypochondrium about the location of the right colic flexure. There was no splashing; water eight; no splashing, no sound. An examination of the abdomen disclosed more sensitiveness over the linea spinaumbilicalis dextra. Pressure made with the tips of the fingers along this line showed considerable soreness. An examination of her vagina disclosed nothing, and an attempt at examination of the rectum caused such severe pain and distress in the abdomen that I desisted.

October 29, 1913.—Examination of a specimen of the urine from a twenty-four hour collection disclosed nothing abnormal except a turbidity caused by the earthy phosphates which disappeared upon the addition of a few drops of acetic acid. Upon reexamination of the lower abdomen a marked sensitiveness over the appendiceal region was discovered. Percussion over the left half of the abdomen excited pain in the right half. Soreness was felt on flexion of the right thigh on the hip and upon pressure, which was not so great on quick extension (1). On quick extension of the left leg she felt pain in the left half of the abdomen. There could be no question apparently that the patient was suffering from chronic appendicitis, and a diagnosis was made accordingly. Whether the peculiar attacks which had occurred during the past year were due to this, I could not say. I directed the application of an ice bag over the appendiceal region. For the general debility I prescribed compound syrup of hypophosphites with quinine and strychnine, with a diet of milk and cereals only.

December 15, 1913.—The patient had had another attack five days previously. She was seized suddenly with violent cramps and purging, and had fainted; she had had four movements as usual. This last attack differed from the preceding ones in that it started with violent cramps. The ice bag had relieved her only momentarily; when it was removed the pain returned, and was perhaps more severe. I advised operation. The patient consulted Dr. A. A. Berg, of Mt. Sinai Hospital, and on January 1, 1914, she entered that institution under his care. A series of x ray pictures of the abdominal organs was taken there, and the findings are presented in the subjoined report of Dr. L. Jaches, röntgenologist to the hospital.

January 10, 1914.—The stomach was found to be slightly enlarged, of normal contour, and moderately active peristalsis. No spasm was noticed. As soon as the stomach filled, the peristalsis slowed down and could be induced only by massage. Nevertheless, the emptying of the stomach began almost immediately after the injection of the contrast meal, and continued regularly without interruption. The first part of the duodenum was never clearly seen in its entirety; on the contrary, part of the cap was defective and at times a gas bubble was seen on top of it. The stream through all three portions of the duodenum was almost continuous. The motility was neither increased nor diminished; in four hours and forty minutes only a slight residue was left, and five minutes later the stomach was entirely empty. This was not rapid for barium.

The motility of the small intestine was rather slow. Without the presence of any visible obstruction, the distal loops of the ileum contained a considerable amount of food ten hours and forty-five minutes after eating. The colon was ptosed and also of slow motility. In ten hours and forty minutes the column of contrast meal was about two and a half inches from the splenic flexure. The next morning, in twenty-three hours and forty-five minutes, when the small intestine was entirely empty, the food had not advanced any farther than the night before. In thirty-three hours it still had not advanced, and at that time most of it had massed at the hepatic flexure and in the ascending colon, as well as in the proximal third of the transverse. The latter had also become more ptosed than at the previous examinations. The appendix was shown partly filled and extending from the cecum in a curved line inward and downward, its length being about one and three quarter inches. The area of discomfort complained of by the patient was found to be at the cecum and proximal portions of the transverse colon, where the two had overlapped each other. In forty-six and one half hours the position of the food was still unchanged.

These x ray findings, in the absence of clinical data, suggested the presence of perityphlitis and marked ptosis of the transverse colon, which caused delay. Another possibility which suggested itself was the presence of a duodenal ulcer, in view of the appearance of the duodenum during the first parts of the x ray examination; on the other hand, the slow motility of the stomach militated against it. The x ray examination thus confirmed the diagnosis of chronic appendicitis, and disclosed the presence of a ptosis of the transverse colon. I had intended, at an earlier period, to inflate the colon for the purposes of examination, but was deterred by the great pain and distress induced in the abdomen by the mere introduction of the finger into the rectum.

January 16, 1914.—Operation was performed as follows: On opening the abdomen, ptosis of the colon, more especially of the transverse part, was found as shown by the radiographic examination. What was not noted in the radiographic examination, however, was a marked hypertrophy and distention of the colon, especially of the cecum, and of the ascending and transverse segments; the latter lay there almost in accordion pleats. The whole musculature was remarkably thickened. Beyond its involvement in the hypertrophy of the cecum, the appendix did not appear to be much affected.

Report of Dr. A. A. Berg: Hypertrophied and ptosed colon; chronic appendicitis. Operation, ileocolostomy and exclusion; appendectomy; division of bands; fourth right hypochondriac muscle splitting incision; peritoneum opened. Gallbladder and stomach normal; pyloric ring thickened, but no ulcer; pylorus patent; Lane bands about the colon and duodenum divided. A long and distended caput coli with ptosis of the greater part of the colon rendered exclusion of colon advisable. The ileum was divided two inches from the cecum, and both ends inverted with chromic and two Pagenstecher sutures. The proximal end was joined to the transverse colon near the splenic flexure by side to side anastomosis. The appendix was removed, and the stump carbolized in the usual manner. The wound was closed and two through and through silk sutures introduced.

February 14, 1914.—The patient was discharged well.

May 6, 1914.—She had been feeling very well and had gone to Lakewood, N. J., where she gained in strength and flesh. One day she ate some particularly heavy food, of which she was very fond and which I had time and again prohibited, and this upset her stomach. Since then she had lost her appetite and had pain in the right half of her back, and occasionally pains in the other parts of the abdomen. An examination of the epigastrium and lower abdomen failed to disclose anything except that in the region of the right colic flexure I thought I detected a small, rather hard nodule. This locality was also quite sensitive to percussion and pressure. Her tongue was covered with a grayish coat, and she had a very bitter taste in her mouth. She was ordered, temporarily, a diet consisting of vegetables prepared as previously directed, soft boiled eggs, milk, and cereals. Tincture of nux vomica, five drops in the form of tablets, was prescribed to be taken after meals and before going to bed. She was also directed to come for a test breakfast.

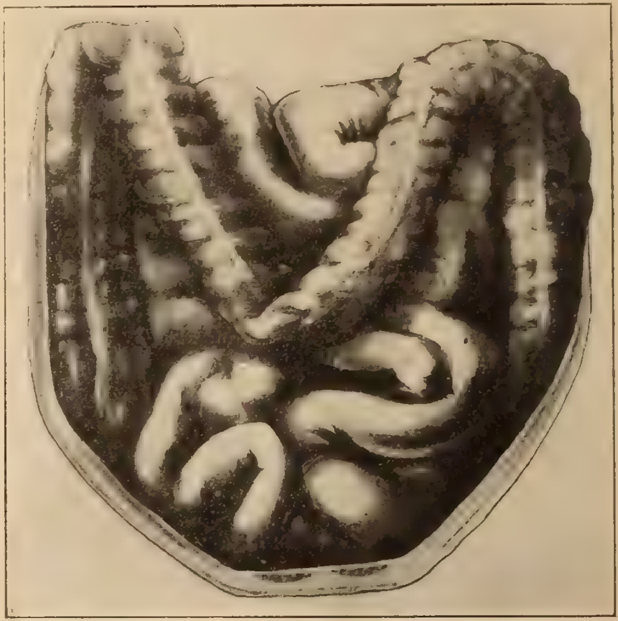


FIG. 1.—Appearance of abdominal contents at operation.

May 10, 1914.—Test breakfast, one hour; tube, fifty cubic centimetres; stomach contents, bread and fluid; much bread, fairly worked up; on the whole, the stomach contents were of ordinary appearance. Reaction, blue litmus +; reaction, Congo +; reaction, phloroglucin Van +; free hydrochloric acid, 0.6; total acidity, 3.2. The residue of the filter was a smooth homogeneous paste. She was feeling better and had lost the bitter taste in her mouth. She had two movements of the bowels daily, the first in the morning being formed, the second about noon rather loose. She was directed to drink cocoa for breakfast and to eat boiled rice once a day, to continue as before directed for another five days, and then resume the diet she had before the diarrheal attacks occurred. Dilute hydrochloric acid, five drops twice a day (with dinner and supper), and the digestive tablets, were prescribed. The urine showed a trace of albumin.

May 26, 1914.—A reexamination of the urine showed it to be normal.

October 20, 1915.—The patient came in to see me concerning her daughter. As to herself, she said she was feeling well and had gained ten pounds during the summer. She had adhered to the diet prescribed for her; her bowels were regular.

May 23, 1916.—This time I saw her with regard to her father. She said she still felt well and weighed 143½ pounds. She adhered to the prescribed diet, which, she said, she must do in order to keep well.

This case is of the greatest interest because of the various objective phenomena and subjective sensations that it presents, and because of the findings of the operation. At the outset, as has already been stated in the history, a physical examination revealed nothing abnormal, the only deviation from the normal, and that a very slight one, being disclosed by the examination of the gastric chemismus.

We have in this case two groups of phenomena. The first, consisting of anorexia, nausea, bitter taste, coated tongue, feeling of fullness in the stomach, occasional accumulation of gas therein, is unquestionably of gastric origin. The second group, the pain in the back and the rather inexplicable symptom complex of the later period[1], might have been of gastric origin, as nothing abnormal to account therefor had been disclosed elsewhere, and intestinal disturbances in consequence of abnormalities in gastric functioning are of every day occurrence, or it might have been of gastroenteric origin. The first group never varied. The same cause, error in diet, produced the same symptoms and even after the operation, when the second group of symptoms had disappeared altogether, the commission of the same dietary faults produced the same phenomena, as already recorded. In the second group there was also little change. The pain in the back came on at irregular intervals and with varying severity. Although at the outset the patient said that her bowels were regular, and later on complained of constipation, this was undoubtedly due to the change in her diet and to the inhibition, more or less, of laxative medication. The infrequent attacks of diarrhea of the last year (previous to the operation) may have been but a part of the constipation or a new feature that supervened in consequence of some underlying pathological condition not hitherto discovered.

In consequence of the operation, the peculiar symptom complex of the last period (three or four large loose evacuations with coincident collapse) disappeared. We are therefore justified in the conclusion that it was due to the abnormal process going on in the large bowel. In this respect it is similar to the case of Nicolaysin, a child with Hirshsprung's disease, in whom the occasional occurrence of paroxysms of diarrhea was noted (2). With this exception, none of the other symptoms pertaining to this disease were present. There was no particular flatulent distention of the abdomen, such as is recorded in almost all of the cases of Hirshsprung's disease. The constipation was no more than the ordinary habitual constipation found in thousands of cases, due to an atony of the intestinal musculature as a result of faulty diet, neglect, or ignorance of proper intestinal hygiene. The history clearly indicates this.

Pain in the back is of most frequent occurrence in women and of most varied provenance. In fact, so common is this pain that a number of years ago a certain author described woman as a weakly creature with a pain in the back. It may result from overwork, straining of the muscles of the back, as we find it in certain strata of society where the woman does all the work required in the household, washing, ironing, scrubbing, sweeping. It may result from ailments in the genital tract (as has been asserted by some, though I have not been able to verify this). It occurs not infrequently in connection with gastric disturbances, with gastralgia, particularly that dependent upon hyperacidity. In this case, however, all these causes are excluded and the backache must be ascribed to the pathological processes going on in the colon. It may, therefore, if of the character described, be considered as one of the symptoms of Hirshsprung's disease. A further point of great interest is that no obstruction of the lumen in any part of the intestinal tract was noted at the operation.

It has been assumed by some, who have had occasion to observe and study cases of dilatation without obstruction, that there must be present some congenital predisposition or peculiar congenital construction of the parts that makes dilatation possible. Though we must, perforce, assume such congenital predisposition, it is nevertheless true that the most important factor, the prime cause in the production of such dilatation, is the generation and retention for a time of large quantities of flatus, their discharge by means of laxatives or enemas and their recurrence. This distention and retraction is certainly sufficient ultimately to weaken the muscular structures and to produce an atony similar to that which occurs occasionally in the stomach. In the case of the bowels, this atony may be followed by a permanent dilatation. As it is the natural tendency of the *vis medicatrix naturæ* to remedy as far as possible the defects to proper functioning that occur now and then in the various organs, given the possibilities hypertrophy follows upon dilatation. A striking example of this is seen in cases of dilatation of the heart (3 and 4).

Another lesson, and a highly important one, taught by the history of this case is that the only way of combating this abnormal condition, hypertrophic enlargement of the colon, which makes the life of the patient one of constant suffering, is operative intervention for exclusion of the affected part of the colon.

REFERENCES.

1. Illoway: A Pathognomonic Symptom or Sign or Appendicitis Not Hitherto Described, *Archives of Diagnosis,* July, 1908.
2. *Norsk Magazine for Laegevid,* 1900, H. 3, cited from Schmidt, *Klinik der Darmkrh.,* Part II.
3. Allbutt: *System of Medicine,* vol. v, p. 975.
4. Satterthwaite, Thomas E.: *Diseases of the Heart and Aorta.*

1113 Madison Avenue.

---

[1] Referring to the period before the operation.

THYROID DEFICIENCY IN OTOLARYNGOLOGY.

By James G. Callison, M. D.,
New York.

(Concluded from page 288.)

THE MUCOUS MEMBRANES.

The mucous membranes share in this process of infiltration. The conjunctiva are thickened and are very likely to suffer from inflammatory states; lacrymation is frequent. The mucous membrane of the nose is similarly affected, especially that of the inferior turbinates. These become hard, retracted and elastic, and there is a suppression of the secretion of the mucous glands, so that the nasal mucosa is dry. The mucous membranes of the mouth, palate and uvula are pale in color and may be much swollen or they may be red and angry from the superimposed infection. The breath may be foul smelling. The larynx, especially the arytenoids and vocal cords, is infiltrated, thickened and pale in color. The voice may have a peculiar intonation. The voice loses tone, range and quality, there is difficulty in placing it, and the singing voice may be lost. Loss of the high notes in a singer's voice is an early sign, to which attention has been called by Granger. This infiltration and swelling about the larynx may extend into the trachea and bronchi, or along the esophagus into the stomach. An irritating cough is a common symptom. The tongue is thick, pale and swollen, its whole substance being involved in the infiltration process described under the muscular tissues and under the skin. It may protrude from the mouth in the subjects of congenital thyroid deficiency. It is puttylike in consistence, and bears on its margin the indentations of the teeth. The tonsils are enlarged. The subjects of the disease are mouth breathers and snore loudly. Adenoids are usually present. Sluder has called attention to the association of inflammation of the lingual tonsils and disturbances of the thyroid gland. The infiltration involves the Eustachian tubes, the mucous membrane of the middle ear and the tympanic membrane, all these structures being thickened. The victim of thyroid deficiency hears badly and commonly complains of noises in the ears. Lynah informs me that he has long used thyroid extract in an empirical way in elderly women suffering from chronic catarrhal otitis media, and has gotten excellent results. Did space permit the introduction of a full discussion of the effects of puberty, child bearing and the menopause on thyroid activity, the reason would be evident.

The mucous membrane of the gastrointestinal tract, of the uterus, the vagina and the bladder are all involved in the process of infiltration.

THE GASTROINTESTINAL SYSTEM.

The entire gastrointestinal system reacts very strongly to the infiltration of its elements, whether muscular, nervous, secretory or mucous. Infiltration of the muscular tissues induces peristaltic paresis, leading to retention of waste materials with consequent fermentation and constipation. In delicate subjects with weak abdominal walls, constipation results in ptosis of the viscera, notably of those organs which are most heavily loaded, namely, the stomach and large intestine. The dropping of the intestine stretches the mesenteric bands by which it is normally supported. The precise spots at which these hypertrophied bands are attached to the viscera have been determined by Sir Arbuthnot Lane. Immediately on either side of them the intestine falls away, and in this manner kinks are formed. The most important of these kinks are the ileocecal, the jejunoduodenal, and the pyloroduodenal, the presence of which has been incontrovertibly demonstrated by Lane. Morbid exaggerations of the hepatic and splenic curves of the colon, and abnormal curvature of the pelvic colon have also been observed.

Imperfect intestinal drainage gives rise to intestinal toxemia, which reacts upon the already enfeebled thyroid gland and intensifies the prevailing condition of inadequacy. As a matter of fact, many of the symptoms attributed by Lane to chronic intestinal stasis are identical with those which have been long included in the symptom complex of benign chronic subthyroidism. These are hypothermia, uncontrollable headache, rheumatoid pains and neuralgia, mental depression, dyspnea, asthenic attacks, premature greyness and baldness, dental caries, cholelithiasis and brownish pigmentation of the skin.

In severe thyroid inadequacy there is absolute want of appetite, and the aversion to food is unconquerable. Meat is especially distasteful. In common with other glands, the secretory flow from the intestinal glands is diminished, and this tends still further to aggravate the constipation. Infiltration of the intestinal mucosa tends to reduce the calibre of the bowel, while disorders of the biliary apparatus still further aggravates the general gastrointestinal derangement.

THE GLANDULAR TISSUES.

The glandular tissues, which are so important a part of the general economy, are also subject to the infiltration of their elements, both parenchymatous and the surrounding connective tissue. This results in a reduced nervous inervation and a reduced blood supply. The secretory function is reduced or inhibited. The effect in the intestinal tract has just been pointed out. In subthyroidic individuals the secretion of the sweat and sebaceous glands is suppressed, leaving the skin dry, rough, and subject to the action of the weather. The liver is congested. The biliary cells do not adequately perform their function, and consequently the bile ducts become choked. The bile passes into the blood, giving rise to the icterus of myxedematous subjects (amber color of the skin). Biliary calculi are frequent. Because of the bile in the blood, it loses its coagulability, and coagulation time and bleeding time are both prolonged.

THE URINARY SYSTEM.

The kidneys appear to suffer slightly from the effects of thyroid insufficiency. It is true that cases of transudation of albumin are not infrequent, but the albumin is very slight. The lesion is not profound, for the albumin disappears after a few days' treatment. The total amount of urine is reduced, and the specific gravity is low. The total nitrogen excreted is greatly reduced.

The bladder is sensitive to the effects of thyroid insufficiency. Owing to its badly nourished condition the infiltrated mucous membrane desquamates rapidly, and large clouds of epithelial cells are seen in the evacuated urine. These are partly from the bladder and partly from the urethra. The bladder becomes sensitive to the contact of the urinary fluid, and there is a constant desire to micturate. The greater number of children and adolescents who are the victims of nocturnal enuresis are subthyrodic, the mother frequently showing unequivocal signs of thyroid deficiency, such as migraine, constipation, menorrhagia, premature greyness, and other signs. These children sleep heavily, and during sleep their temperature falls. They seem to be in a state of stupor. The ejaculator urinæ reflex responds too readily, before the higher nervous centres have been warned. Nocturnal incontinence generally disappears as the child grows up, though it has been known obstinately to persist.

THE SEX ORGANS.

Where the function of the thyroid is appreciably reduced, the sex organs do not develop. When the organism is supplied with the requisite amount of thyroid extract, the deficiency in development is made good in a comparatively short time. Undescended testicle, on one or both sides, is by no means rare. Where the thyroid function is slightly impaired, as in infantilism of the Lorraine type, development of the genitals is invariably retarded, and in many instances it is permanently inhibited.

In girls the ovaries develop late. Menstruation may not make its appearance until the eighteenth year, and then sometimes assumes the unusual form of menorrhagia. The uterus is small and infantile. The posterior wall develops slowly, sometimes leading to a marked retroflexion. It is generally believed that menorrhagia is the result of retroflexion; this, however, is not the case. Retroflexion and menorrhagia are both referable to the same cause, namely, thyroid insufficiency.

In subthyroidic women the discharge is prolonged, frequently ceasing for a day and beginning again, while the intermenstrual periods are briefer than normal. The higher the degree of thyroid inadequacy, the greater the degree of menstrual losses. The profuseness of the discharge is directly due to the infiltration of the muscular element as well as the intrauterine mucosa, combined with a want of coagulability on the part of the blood. The vaginal mucosa is infiltrated and soft, and suggests to the touch the beginning of labor.

The effect which marriage has on the vitality of the thyroid gland is well known. From the outset the gland undergoes hypertrophy—sometimes visibly so—and from this increased activity the subthyroidic woman derives immense benefit. At the end of a period which is sometimes very short, the uterine retroversion is corrected. Should she become pregnant, the secretory activity of the thyroid gland is redoubled. Signs of hyperthyroidism are not infrequently observed from within a few hours of impregnation. The face becomes drawn, the eyes brilliant and feverish, and there is an impression of sudden general emaciation. The hemophilia disappears, menstruation ceases. It may happen, however, that the stimulating influence does not last. Menstruation reappears, and the fertilized ovum is carried off in the flood. Herein lies the secret of the many abortions which are the tragedy of so many women's lives.

MINOR THYROID DEFICIENCY AND DIAGNOSIS.

An effort has been made to make this summary of the morbid pathology and symptomatology of thyroid deficiency as complete as possible. The description is necessarily based on advanced cases of thyroid deficiency, and with a typical complete train of symptoms. The systemic changes, while extremely diverse, are easily understood and almost guessed, if it is remembered that they are brought about by the absence of a catalyzer, acting through the blood, and necessary to the metabolism of each cell. The absence of this catalyzer materially interferes with the carrying on of the processes of life and growth. Its deficiency will result in a stunting of those processes in just that proportion in which it is lacking in the circulation. In many cases of mild thyroid deficiency the patients, on superficial inspection, appear perfectly normal, and are so nearly normal that they have difficulty in persuading friends and even the physician that there is really anything wrong with them. They are just ailing, that is all. Yet there are a few symptoms that are fairly constant and easily observed in uncomplicated cases of thyroid deficiency.

These constant, easily observed symptoms have to do with, 1, the hair, 2, the circulation, and, 3, the gastrointestinal system. The eyebrow sign of Hertoghe is very constant. It consists of a thinning of the eyebrows in their outer third. The eyebrows as a whole may be almost gone, but this scantiness in the outer third as compared with the whole is constant. With this, the eyelashes may also fall out. The hair may fall out early, or it may turn grey prematurely. The patients appear old beyond their years. If the hair falls out there is a certain order or sequence in which this occurs. It begins to disappear from above the forehead, the socalled sweat band alopecia. Next the hair begins to disappear from the nape of the neck, at the same time becoming thinner over the whole head. The axillary and pubic hair will also follow in the wake of the hair from the eyebrows and scalp.

The temperature is consistently subnormal, running down to 97° F. or lower for the morning temperature. With this the pulse rate is slow, the blood pressure below what it should be for the age of the individual. The subject is always chilly. He stands cold badly. Such a person may be heavily dressed, even in summer weather. These patients are constantly asking for a tonic to improve their circulation, hoping thereby to escape the intolerable coldness of the skin, especially of the hands and feet.

From reasons already pointed out, the sufferer from thyroid deficiency is subject to extreme and constant constipation. Diet and exercise does not relieve this constipation which is usually accompanied by ptosis of the viscera. Such patients are compelled to take laxatives continuously. The tongue is large, flabby, and bears the indentations of the teeth along its margins. This seems to be an early and constant sign of thyroid deficiency. Other symptoms to be kept in mind are dysmenorrhea and metrorrhagia, mental and physical fatigue, especially matutinal; the frontal and occipital headaches, with matutinal exacerbations; somnolence; obesity; apathy, indolence, mental sluggishness.

IN CHILDREN.

The various grades of cretinism which are so readily recognizable are the grosser evidences of impairment of the thyroid gland and its functional activity. There are, however, many lesser signs and symptoms of congenital hypothyroidism which often escape detection, the recognition of which would be attended with results most beneficial to the backward children so afflicted. These can rarely be observed until the end of lactation in breast fed infants, but from that time on such symptoms as the following should at least excite the suspicion that the underlying cause may be a congenital defect of the thyroid gland:

Infantile constipation; unusual coldness of the limbs; failure of the fontanelles to close within the normal period; slowness in learning to balance the head or sit up; delayed eruption of the teeth and their malformation; early caries of the deciduous teeth; lack of vivacity and intelligence, and slowness in learning to smile; somnolence; lordosis, and scoliosis; slowness in walking; small and weak muscles; mouth breathing and snoring; adenoids and lymphatic enlargements; slowness in learning to talk; rickets; large, protruding abdomen and protruding umbilicus; defects of hearing; enuresis; poor lustre and imperfect growth of hair; undue puffiness; anorexia; indeed, any of the signs and symptoms in minor degree mentioned under cretinism and myxedema.

Bottle fed babies in particular should be watched for symptoms of thyroid deficiency. In the child the thyroid functions poorly during the first few years of life. The intestinal tract is best adapted to receive and digest the mother's milk, and so the thyroiodine, or thyroid secretion, is supplied with the food. The calf, on the other hand, is prepared to fend for itself from the earliest period of life, has its own thyroid apparatus well developed to supply the necessary thyroid secretion. The cow, in consequence, does not excrete thyroid secretion in the milk. Children fed on cow's milk rather than the mother's milk fail to receive the proper amount of this necessary substance. This deficiency should be made good on the first evidence that the child is not doing well on artificial feeding.

RECAPITULATION OF EAR, NOSE AND THROAT MANIFESTATIONS.

Specifically, it is asserted that the following conditions in the ear, nose and throat, or of interest to the ear, nose and throat specialist, may be due to thyroid deficiency, and that they will respond to thyroid medication if they have that etiology:

1. Large tongues, bearing the indentation of the teeth, that prove to be so troublesome at operations, and occasionally are large enough to interfere with breathing in children or to render postnasal examinations difficult in adults.
2. Hard, elastic condition of the inferior turbinates, the socalled primary atrophic rhinitis.
3. Infiltration and thickening of the larynx, including the arytenoids and vocal cords, with loss of the singing voice.
4. Infiltration of the submucosa of the bronchi and bronchioles, with narrowing of their lumen, with difficulty in breathing, cyanosis, and asthmalike attacks.
5. Hypertrophied tonsils and adenoids, with mouth breathing and snoring. Thyroid deficiency may or may not be a factor in infected tonsils.
6. The disagreeable hacking cough which is sometimes present, and for which no apparent reason can be found.
7. Nasal hydrorrhea is sometimes present in thyroid dysfunction. This is usually of a paroxysmal type.
8. Infiltration and thickening of the tympanic membrane, the middle ear and Eustachian tube, with tinnitus aurium and deafness.
9. The slow, prolonged, troublesome oozing hemorrhages sometimes seen in tonsil operations, with severe postoperative reactions and slow healing.
10. Coagulation time and bleeding time are both prolonged. This will account for many socalled hemophiliacs.
11. The ingestion of toxic material from the tonsils, the gums or the nasopharynx is a common cause of thyroidal excitation.
12. These patients are subject to a multiplicity of infections, and because of their lack of resistance, do badly after operations.
13. That this condition of thyroid deficiency in children may be brought on by fright and operative shock, and that it accounts for some of the bad postoperative reactions.
14. On theoretical considerations, it would seem probable that otosclerosis is the result of thyroid or thyroid and thymus dysfunction. Leading in these theoretical considerations is the fact that these organs control calcium and phosphorus metabolism, while otosclerosis seems to have as a basis a disturbance in the metabolism of these minerals.

TREATMENT OF THYROID DEFICIENCY.

The treatment of thyroid deficiency is, of course, the administration of thyroid substance. But the matter is not just so simple as that. We are treating a patient, not a disease, and the individual calls for consideration. We have seen in this study that insanitary surroundings play an important part in the etiology of thyroid deficiency. This must be corrected, and the patient transferred to better sanitary conditions, if this is at all possible. A good water supply is essential, as well as proper housing conditions. Intestinal toxemia plays a part in the causation, and so intestinal antiseptics must be used to get the best results. These may include thymol, betenaphthol or other tried intestinal antiseptics. McCarrison particularly recommends mercury with chalk—gray powder.

The regulation of the diet is of the utmost importance, but McCarrison interdicts nitrogenous foods and Hertoghe prohibits carbohydrates. In my opinion, these patients, remembering the part poor nourishment plays in the etiology of the disease, should be placed on a simple diet, rich in vegetable substances, and with as little meat in it as possible. This in view of the iodine content of these two forms of food. This diet should be abundant enough to place the patient on a hyperalimentation basis, and he should be closely watched and the diet reduced as desirable. With this rich diet, the patient should receive an abundance of fluid, to carry away the urea and other products of oxidation.

These patients should have mental and physical rest. The infiltration of muscle and nerve tissue precludes either mental or physical exertion. In many cases of mild thyroid deficiency complete rest is not required, nor is it desirable, as these individuals must continue at their daily occupations. However, unnecessary and strenuous exertions should be interdicted. It is scarcely necessary to say that the hypertrophied tonsils and adenoids present in these patients should not be interfered with and no operative procedures should be undertaken until, under a thorough course of thyroid gland, the coagulability of the blood is increased and the coagulation time and bleeding time reduced to normal.

The initial dose of thyroid gland substance should be from one half to one grain of the dried gland, once a day at bedtime on an empty stomach. Infants and small children bear thyroid substance well, and can be started on half the adult dose. It will rarely be necessary to exceed two, or at the outside, three grains a day, and the patient receiving these maximum doses should be under close observation to detect the first symptom of overdosing. The length of time it will be necessary to continue the treatment will depend on the amount of functional gland still present. If there is a complete atrophy of the thyroid gland, then it will be necessary to continue its administration through life. If there is a minor deficiency a short course of treatment will be sufficient to restore the gland to conditions of health. This will again depend on the age of the patient, all vital processes having a greater tendency to return to normal in children than in the aged.

There are a few important points to be remembered when instituting thyroid treatment. The first of these is, never prescribe a thyroid preparation that has not been standardized as to its iodine content. As stated under the discussion of physiology, the therapeutic efficiency of thyroid preparations is directly proportional to the iodine content of the gland from which it was prepared. Further, no preparations should be prescribed with which you are not familiar with the amount of gland substance it contains relative to fresh gland, whether that preparation be fresh or dried gland, liquor or extract.

It is essential to remember that patients who require thyroid substance are very much less tolerant of the substance than are healthy individuals. The dose should be reduced in hot weather, and its use intermitted at all times, rather than being continuous. These periods of intermission in women should include the menstrual period.

There are certain symptoms of thyroidism that may follow excessive dosing. These are tachycardia, palpitation, diarrhea, vomiting and mental excitement. The guide to the dose should be the temperature, pulse rate and blood pressure, and the loss of weight in obese subjects. These should all be slowly brought to normal. The smallest dose which produces the desired result is the one which should be used.

Thyroid substance has a pronounced diuretic action, and, promoting as it does the flow of succus entericus, it relieves constipation. In excessive doses it may cause diarrhea. The appearance of sugar in the urine is another indication of excessive dosing. While taking thyroid substance the patient should be under close observation, and not permitted to use the drug indiscriminately. He should be made to understand there is danger in using thyroid substance, and that he should be guided by some one who understands this danger.

In children the body weight is a safe index by which to gauge the dose. Once the initial loss of weight, owing to the disappearance of myxedematous and excessive fatty tissue, is passed, the child should put on weight steadily. Loss of weight indicates excesive medication.

McCarrison's very complete book on *The Thyroid Gland* is a late and exhaustive publication on the internal secretion of the thyroid. Hertoghe, in *The Practitioner,* for January, 1915, has a complete discussion on Thyroid Insufficiency. The January and February numbers of *The Practitioner* for 1915 were devoted to internal secretions. The NEW YORK MEDICAL JOURNAL also devoted the issues of February 7 and 14, 1920, to the subject of internal secretions.

REFERENCES.

1. McCARRISON, ROBERT: *The Thyroid Gland,* William Wood & Co., New York, 1918.

2. HERTOGHE, Dr. E.: Thyroid Insufficiency, *The Practitioner* (London, 1915), xciv, 26-69.

3. DALE, H. N.: The Physiology of the Thyroid Gland, *The Practitioner,* xciv, 16-26.

4. GLEY, E.: The Theory of Internal Secretion: Its History and Development, *The Practitioner,* xciv, 2-15.

5. McCARRISON, ROBERT: Endemic Goitre, *The Practitioner,* xciv, 70-93.

6. WILLIAMS, LEONARD: Exophthalmic Goitre, *The Practitioner,* xciv, 94-106.

7. HERTZ, ARTHUR F.: The Parathyroid Glands, *The Practitioner,* xciv, 107-111.

8. PATON, D. NOEL: The Physiology of the Chromaffin System, *The Practitioner,* xciv, 112-122.

9. LEOPOLD-LEVI: Thyroid Insufficiency, *The Practitioner,* xciv, 199-219.

10. GRANGER, J. PARLANCE: Thyroid Insufficiency in General Practice, *The Practitioner,* xciv, 317-335.

11. PENDE, N.: Endocrinologia, *Vallardi* (Milan, 1916), p. 797.

12. CASTEX, MARIANO R.: Paroxysmal Nasal Hydrorrhea Due to Dysthyroidism of Syphilitic Origin, *Endocrinology,* iii, 29-31.

13. SLUDER, GREENFIELD: Clinical Observation of Lingual Tonsil and Goitre, *American Journal of the Medical Sciences,* clvi, 248.

14. LYNAH, HENRY L.: Personal Communication.

15. SAJOUS, CHARLES E. DE M.: *The Internal Secretions and the Principles of Medicine* (two volumes), F. A. Davis & Co., Philadelphia, 1918.

16. ADAMI, GEORGE: *Principles of Pathology,* vol. i, Lea & Febiger, Philadelphia and New York, 1910.

17. COBB, IVO GIEKIE: *The Organs of Internal Secretion,* William Wood & Co., London, 1918.

206 EAST SEVENTEENTH STREET.

EXOPHTHALMIC GOITRE AND SURGERY.

By Israel Bram, M. D.,
Philadelphia,
Instructor in Clinical Medicine, Jefferson Medical College.

(Concluded from page 273.)

Case III.—Mrs. G. E., white, aged forty-four years, was sent to me November 1, 1919, suffering from weakness, palpitation, socalled nervousness, and indigestion. Family history and previous medical history practically negative. Menstruation began at fourteen years, always regular; married at twenty, had three children, who are living and well; had one uneventful miscarriage. The present illness dates back to May, 1905, when through some worry she became nervous and complained of weakness in the chest and pain in the neck. She went to Atlantic City, where she had an attack of persistent vomiting which was attributed to pregnancy by the medical attendant, but the facts in the case disproved the theory. She was brought home, where she remained the entire summer of that year, still complaining of persistent nausea and a feeling of weakness in the chest, and nervousness, though she slept fairly well and weighed one hundred and fifty-four pounds.

At this time her ailments gradually returned, and she became progressively worse until 1910, when she lost about thirty pounds in weight. A diagnosis of hyperthyroidism having been made, she was sent to Europe in May, 1910, where she stayed at a socalled goitre sanitarium in the Carpathian Mountains for three months. When she reached home she weighed 165 pounds, and her condition was so improved that she was considered cured by the family. In September (1910) there was a relapse, with nausea, vomiting, reported weakness in the chest, loss in weight, insomnia (for the first time), and nervousness. In 1912, goitre was first evident. Her condition remained more or less stationary, periods of improvement alternating with periods of relapse until 1914, when, weighing one hundred and forty pounds, she was given the rest cure and milk diet in a hospital. She became worse and begged to be taken home. From February to May, 1914, she was at the Lankanau Hospital as a typical case of Graves's disease. Operation (right thyroidectomy) was performed. After a brief operative convalescence she was sent to Atlantic City to recuperate. The seashore did not agree with her, so she came home, where there was a certain degree of improvement, of several months' duration only, however, and in 1915 she was sent to the Pocono Mountains, where she again improved. Returning home after a few months, she became worse, and was again sent to Atalntic City (June, 1916). Here she had an exacerbation of her difficulties, and was taken home, suffering with marked insomnia, exhausting nausea, retching, and vomiting, restlessness, and weakness amounting to prostration. In the fall of the year, having improved slightly, she moved to the Bronx, New York, where improvement became progressive until 1917, when she returned to Philadelphia. Her condition remained fair up to the fall of 1919, when she again became worse and consulted the surgeon who performed the thyroidectomy. He advised another operation, but the patient postponed her decision. On November 1, 1919, she was sent to me for observation.

On physical examination it was seen that the patient was a fairly well nourished white woman of medium height, appearing somewhat fidgety. She spoke hurriedly and seemed anxious to impart all possible information about herself in one breath. Her skin was soft and clammy to the touch, and here and there an erythematous blotch could be seen. Dermographia was typical. The eyes presented moderate exophthalmos, the left eye protruding forward more than its fellow. Stellwag's, Moebius's, and Von Graefe's signs were present. The patient complained of a persistent feeling of dryness and smarting of the eyes. The neck presented a moderate sized goitre involving the isthmus and left lobe, and to a lesser extent the right lobe, which had become regenerated. Over the site of operation a neat semilunar scar was visible, indicating the flap of preference of the surgeon who had performed the lobectomy over five years before.

Inspection, palpation and percussion proved the goitre to be of the typical vascular, hyperplastic type—soft, compressible, with systolic thrill and murmur. Physical examination was otherwise negative, except for the presence of a diminished chest expansion and evidences of moderate cardiac enlargement with a weakening of heart sounds. Pulse was ninety-six a minute, poor volume, compressible, regular, and rhythmical. Systolic blood pressure one hundred and forty, diastolic one hundred and ten. Reflexes were exaggerated; there was a typical tremor of outstretched fingers, less marked of the toes. The mentality of the patient, as implied, was typically quickened, but rather more so than is commonly observed in hyperthyroidism. She was alert, all eyes and ears, even to the point of suspecting that I would suddenly force her into operation. Above all, she was anxious to have her full say in the matter of those symptoms which troubled her most, continuing to speak in a hurried manner, repeating herself twice or more until, from sheer exhaustion, she stopped, when I was finally enabled to formulate the mode of procedure in my questions. Her responses lacked in continuity of thought, and it was necessary from time to time to curb the tendency to repeat the prolonged narration of subjective phenomena.

Treatment was postponed for several days until I was able to secure a fairly connected history from the husband, a man of more than average intelligence. He was advised of the vital importance of complete cooperation and instructed in the details of the same. The importance of complete harmony and tranquillity in the household was especially emphasized. The patient called twice a week, and after the second week improvement was manifest. Within three months the pulse rate was seventy-four, the subjective heart symptoms had disappeared, there was a substantial increase in weight, the thyroid had diminished in size to almost normal, exophthalmos had completely disappeared on the right side and was hardly noticeable on the left, and in every respect the physical condition of the patient was very satisfactory. She was "feeling fine"—to use her own words. Her mentality, however, presented but little change, although her thoughts and speech were less precipitous and there was perhaps an increase of mental poise at times when she would engage in conversation on minor topics of the day. Her overalertness and introspection were still very marked, and occasionally a statement would escape her which seemed to revert to childish simplicity. After approximately four months of treatment, her physical condition appeared practically normal, and she was instructed to call once a week. She was also informed that, with complete cooperation on her part, she would probably be well enough to be discharged within the subsequent four or five months. This made her very happy, and she promised to do everything possible to assist in the treatment.

On March 20th, while preparing to go shopping, the patient fell down a flight of stairs in her home, forcibly striking her head. She was dazed for a few days, became sleepless and very weak, and, ten days after the accident, there developed definite psychical phenomena requiring restraint. Periods of childishness alternated with periods of weeping and laughing without any provocation. Shortly after, visual and auditory hallucinations set in, and her husband, always untiring in his devotion, was looked upon as a designing creature eager to put her out of existence. Song would alternate with shrieks of terror, an hour of rambling talkativeness with another of mute silence, until after two weeks of restlessness and complete insomnia the patient became so unmanageable that it was decided to transfer her to an institution for the treatment of mental cases. Dr. Albert C. Buckley, medical superintendent of the Friends Asylum, Frankford, Philadelphia, was kind enough to place her under his care, where her condition remained such that no definite opinion could be ventured regarding the probable course and prognosis. During the first few weeks after admission to this institution the patient was violent, refused food; there were evidences of marked gastrointestinal irritation, all of which tended to reduce the patient. The recent course of events in this case is best described in Dr. Buckley's own words:

". . . After a prolonged period of psychomotor activity and persistent refusal of food, there followed rather abruptly a critical state marked by delirious stupor, tumultuous cardiac action, tachycardia (118 to 124), with signs of threatened collapse. The patient would not only refuse food, but the stomach seemed rebellious even toward blandest foods and water, vomiting following the administration of food, and occasionally without exciting cause. At no time was the temperature noted higher than 98.6°, occasionally as low as 97°. You may recall I expressed my willingness to follow your suggestion in the administration of pituitrin, for its effect upon the circulation, but as the general condition began to progressively improve in the seventy-two hours following your visit, I decided to wait for the return of the circulatory embarrassment, which up to the present time has not appeared. In fact, physically the patient's condition has very slowly improved.

"Mentally she is not as restless, but seems to express as disconnected a flow of ideas as she did early in the course of her disorder. A few days later there developed a troublesome diarrhea, six to eight movements in twenty-four hours, lasting about three days. The patient again refused food for two or three days, but gradually has again improved in this matter: the pulse rate has not been over 108 since July 20th, and at the present time ranges from 80 to 90.

"In accordance with your request, I am writing my view of the treatment of this case, which I shall ask you not to construe as being applicable to the treatment of hyperthyroidism in general. We should not disregard the fact that in psychoses complicating exophthalmic goitre we may have to deal with more than a thyrotoxicosis; with an intoxication which has a wider origin from disorders of general metabolism. If we are correct in our assumption that the thyroid secretion affects metabolism in health, why not still more so, and to the detriment of the entire organism in states of altered function. Furthermore, as in this case, reduction in the size of the gland is not to be relied upon as a favorable sign; fatal cases in which the gland became so reduced that it could not be palpated a few days before death, have been reported.

"If we may draw an analogy, it is pretty definitely established that in acute intoxications of exogenous origin, as in acute alcoholic psychoses, we are less concerned with alcohol poisoning and more with an acidosis, arising from metabolic disturbances, largely of nephritic origin. In fact, one may not dare to deprive the patient of the very poison—alcohol—which primarily was responsible, for fear of circulatory collapse. We must attend to the elimination of secondary toxins, indirectly produced by the effect of alcohol upon the viscera, and indirectly only can we say that the alcohol is responsible for the mental state.

"To return to the point of the question in hand, if the cardinal symptoms of hyperthyroidism are present, our treatment should be directed against, but not limited to, those symptoms; we must study the whole patient; the toxins of starvation, I believe, constituted a factor which could not be combated for fear that forced tube feeding would have resulted in fatal collapse on account of the patient's violent resistance; the patient's elimination should be studied; in this case the urinary output was concentrated about four times the normal. In other words, we gave more attention to the symptoms of nonthyroid intoxication.

"In this case we felt the problem confronting us was that of the elimination of toxins; therefore we did not have time to discuss what the toxin might be; this was done by colonic flushing, normal saline Murphy's drip, water by mouth drop by drop to avoid vomiting, which had already begun. Next, food was all that was needed, and by that time Mrs. E. was ready to help us. There is no certainty that we are out of the woods yet; I do not know that the same thing will not happen again; in fact, I am not optimistic.

"Physically, the patient's condition is better; mentally, she is very little better."

Buckley also reports a case of insanity occurring four years after thyroidectomy (9). In this patient it can be assumed that the undue postponement of the proper nonsurgical management of the disease was responsible for a degree of mental instability both actual and potential, which, by the mere physical shock of a fall, asserted itself in a violent outburst of a definite, unmanageable psychosis.

I have frequently pointed out in discussions (10 and 11) and in published case histories (12 and 13) of permanent nonsurgical cures, that although the symptomatology of exophthalmic goitre commonly includes mental phenomena indicating varying degrees of departure from the patient's usual behavior, revealing a moderate change in temperament and character in cases where the thyroid is intact, these mental symptoms rarely reach the threshold of evident insanity. There is in the course of time complete restoration of the physical and mental equilibrium under proper nonsurgical management. It is from among the patients whose thyroid has been tampered with by the knife, that nearly every case of hyperthyroidism plus insanity occurs, and in these cases the damage to the circulatory and nervous system is often a problem which tries the soul of the conscientious internist.

SUMMARY.

What, then, are the deductions to be derived from the arguments presented in this paper? Let us enumerate:

Surgery is indicated in Graves's disease when:

1. Marked pressure symptoms of cervical and thoracic structures are evident.

2. Malignant degeneration of the thyroid occurs. (Marked pressure symptoms and malignancy are unusual occurrences during the course of thyroid hyperplasia.)

3. A local structure (tonsils, appendix, pelvic abnormalities), which, by a careful process of exclusion, is found to have an etiological bearing on the syndrome. Surgical removal of such diseased tissues, in breaking the continuity of the vicious circles upon which the symptom complex depends, may bring about a cure.

Surgery is contraindicated in the vast majority of cases of Graves's disease, for,

1. The pathogenesis of the disease points to the thyroid as playing but a small part in the causation of the syndrome.

2. The symptomatology of the affection is as widespread as the body itself, favoring strongly the pluriglandular theory.

3. Physiology indicates that, in the human being, it is almost as dangerous to attack surgically an overactive vital organ, such as the thyroid, as to attack surgically an overactive heart.

4. On clinical grounds, Graves's disease does not fall in the realm of surgery, as indicated by the considerable mortality rate, frequent operative accidents (e.g., myxedema, tetany, vocal paralysis), postoperative sequellæ (acute exacerbations, acute psychoses), recurrences, and the lack of conclusive proof of complete surgical cures. As has been suggested, surgical interference with the thyroid, by reducing the recuperative powers of the patient, prolongs the state of invalidism and favors profound degenerative changes of the tissues of the circulatory and nervous systems, rendering the prognosis less favorable and the task of the internist tedious.

5. On empirical grounds, Graves's disease belongs strictly in the field of the internist who, having made endocrinology his field of special endeavor, is capable of demonstrating complete and permanent nonsurgical cure of every case of the disease in which the vital structures are not badly damaged and a reasonable degree of cooperation is obtainable.

REFERENCES.

1. BRAM: Shell Shock in Soldiers, NEW YORK MEDICAL JOURNAL, July 5, 1919.

2. *Idem:* The Surgeon and Internist in the Nonsurgical Treatment of Exophthalmic Goitre, NEW YORK MEDICAL JOURNAL, January 4, 1919.

3. FRAZIER, C. H.: Constitutional Disturbances of Toxic Goitre as Influenced by Surgical Therapy, *Pennsylvania Medical Journal* (Athens), 1918, 21, pp. 510-514.

4. HAEBERLIN, J. B.: Treatment of Hyperthyroidism, NEW YORK MEDICAL JOURNAL, 1915, 101, pp. 1109-1111.

5. RICE, J. F.: Medical Treatment of Exophthalmic Goitre, *Medical Record*, 1918, 94, pp. 97-99.

6. BEEBE, S. P.: Recurrence After Thyroid Operations, *Medical Record*, 1918, 93, pp. 627-630.

7. MCCARRISON, R.: *The Thyroid Gland*, 1917. William Wood & Co., New York.

8. LANE, Sir ARBUTHNOT: *Journal A. M. A.*, 1918, 71, pp. 719-720.

9. BUCKLEY, A. C.: Relation of Hyperthyroidism to the Nervous System, NEW YORK MEDICAL JOURNAL, December 6, 1913.

10. BRAM, I.: Nonsurgical Treatment of Exophthalmic Goitre, NEW YORK MEDICAL JOURNAL, November 27, 1915.

11. *Idem:* Nonsurgical Cures of Exophthalmic Goitre, *Ibid*, April 27, 1917.

12. *Idem:* Course and Progress of Exophthalmic Goitre, *Archives of Diagnosis*, January, 1919.

13. *Idem: Exophthalmic Goitre and Its Nonsurgical Treatment*, C. V. Mosby Company, St. Louis, Mo.

1714 NORTH SEVENTH STREET.

ULCER OF THE CORNEA.*

By HOMER TUTTLE, M. D.,
Ithaca, N. Y.

The clinical subdivisions of ulcers of the cornea are almost innumerable. It seems, from an examination of the various textbooks, as though each author strives to find some new name for each differently located or shaped ulceration of the cornea. I shall, therefore, briefly mention ulcers of the cornea occurring in children and young adults and those of adults over forty years of age.

The form most frequently encountered in children and young adults is the phlyctenular variety, known as phlyctenular conjunctivitis and phlyctenular keratitis. We find this particularly in children and young persons of a weak, scrofulous constitution, and those of a nervous excitable temperament. It often follows the exanthematous diseases, or eczema of the face. Rhinitis is usually present and adenoid vegetations are common, associated with enlarged tonsils and enlarged cervical lymphatics.

In some cases hereditary syphilis or tuberculosis is a factor. The subjective symptoms are pain, photophobia and lacrymation. The child avoids the light, hides in dark corners, and struggles violently if an examination or separation of the lids is attempted. Upon inspection we first notice small grayish red elevations upon some part of the cornea, usually the periphery, varying in size, perhaps as a rule being about one half the size of the head of a pin. There may be one such elevation or a row of them extending around the cornea and these surrounded by reddened conjunctiva. Sometimes the phlyctenules are superficial and appear as small transparent vesicles, whose epithelial covering is soon shed, leaving a small ulcer. This affection is usually acute, though it may be chronic, as there is a great tendency to relapses. Just as the symptoms are subsiding, the phlyctenules disappearing and the disease seeming to be almost cured, all the acute symptoms return, a fresh crop of pustules make their appearance, and a severe relapse takes place.

---

*Read before the Bradford County Medical Society in September, 1915; rewritten in 1920.

Each attack in itself should be promptly treated, when it will usually subside in a short time, as it yields readily to treatment. As the disease is largely the local expression of a systemic disturbance, it is our duty to find, if possible, the cause and remove it, employing at the same time local treatment. A careful regulation of the diet must be enforced, excluding all sugars and starches, confining the patient to meats, eggs, milk, oatmeal, etc. The bowels should be kept open and small doses of calomel will be beneficial. Palatable preparations of iron and codliver oil may be employed with benefit. In my experience the syrup of the iodide of iron given in five to thirty drop doses, according to the age of the patient, three times a day after meals, has always given excellent results.

Locally, I use a saturated solution of boracic acid as a cleansing wash, followed by a twenty-five per cent. solution of argyrol every three or four hours, using one drop in each eye. Finely powdered calomel dusted upon the ulcers once a day hastens the healing process. This should not be used if the patient is taking the iodide of potassium internally. I have used with marked benefit an eye salve called compound yellow oxide and adrenalin ointment, perhaps the size of a grain of wheat, to the under surface of the upper lid once a day and continued for one week after the ulcers have healed and all redness has disappeared. The refraction of the patient's eyes should now be thoroughly examined and suitable glasses prescribed if needed.

Ulcers of the cornea occurring in individuals over forty years of age are usually of the serpiginous or creeping variety. They may develop at either the margin or centre of the cornea as a yellowish or grayish white spot, usually oblong in shape, its edges raised and ragged, with an opacity greater at the margin than at the centre. Surrounding the ulcer is a zone of gray infiltration, mottled or streaked with white. A violent iritis usually accompanies this condition and if the septic infection is not checked promptly, a hypopyon is formed. The ulcer always extends peripherally from its borders, steadily and rapidly. The rapidity of the ulceration is such that the entire cornea may be eaten away in two or three days.

The disease may occasionally make its appearance in a far less acute attack, in which the inflammatory symptoms and pain may be so moderate that the subject will allow the condition to go on for several days before seeking advice, when a considerable portion of the cornea may be found to be affected and the anterior chamber half full of pus. Corneal ulcers are always caused by bacterial infection, the bacteria having gained entrance through a slight abrasion or injury of the corneal epithelium. All typical cases are due to the pneumococcus, although other bacteria, particularly the staphlycoccus and streptococcus, may cause ulcers.

No matter how small and insignificant it may appear, a corneal ulcer is always an element of danger to visual acuity and even to the integrity of the globe. If the patient is seen early, with proper treatment the prognosis is favorable. To determine the exact limits of an ulcer, a drop of two per cent. solution of fluorescein instilled into the eye will stain the denuded part of the cornea a greenish tint in marked contrast to the surrounding normal tissue.

In the treatment we should first seek to remove the cause. Search should be made for foreign bodies lodged upon the cornea or conjunctiva, and cilia that may be rubbing the globe should be removed. The conjunctiva should be flushed with a one in five thousand bichloride solution. The eye should be thoroughly cocainized and the electrocautery applied to the ulcer. I always do this at my patient's first visit, and since adopting this method I have never had a patient lose an eye from this affection nor have I failed to stop the spreading of the ulcer.

I use a ball tipped platinum electrode about two mm. in diameter and use enough current to heat the ball tip to a cherry red. With this I touch every part of the ulcer, destroying all necrotic and infected tissue. The eye is again flooded with the one in five thousand bichloride solution, the lids drawn away from the globe, and a quantity of one per cent. yellow oxide of mercury and atropine ointment placed inside the lids which are now closed and covered with a light gauze dressing and bandage. If possible the patient is put to bed and the eye is not disturbed for twenty-four hours. Usually the pain is greatly diminished in a few hours after the cautery is applied, in twenty-four hours the patient is nearly free from pain, and the appearance of the eye is much improved. The eye is cleansed daily with a saturated solution of boric acid and the ointment and bandage applied as before. In cases where perforation seems impending, a daily paracentesis of the cornea remote from the ulcer should be done. The ulcer usually heals completely in from seven to ten days, leaving sometimes a small opacity which gradually lessens and disappears.

There are three things upon which I place special emphasis. First, thoroughly impress upon your patient the danger and seriousness of any and all abrasions or injuries of the cornea, no matter how small and trivial they may seem at the time of injury and the necessity of seeking medical or surgical treatment at the earliest possible moment. Second, use the electrocautery upon all infected ulcers at the first treatment, converting a foul septic ulcer into a clean one. Third, treat all ulcers as surgical cases, not allowing the patient or his friends to remove dressings nor attempt treatment. In such cases, if possible, the patient should be treated and confined in a hospital until well.

307 East Buffalo Street.

SOME TOXICOLOGICAL ASPECTS OF SURGICAL RUBBER GOODS.

By Walter I. Galland, A. B.,
New York.

Reports of unexplained reactions following intravenous medication have been frequent in recent medical literature. A report from Stokes and Busman (1) at the Mayo Foundation, traces some untoward reactions following arsphenamine injections to a certain brand of rubber tubing. This brings up a subject of particular interest to me. Prior to taking up the study of medicine, I served for five years as chemist in a rubber manufacturing plant. It is not generally known that a number of poisonous substances are used in the manufacture of rubber, and it is highly probable that the presence of such poisons in surgical goods constitutes an actual menace to the patient.

The term, pure gum, is used so frequently in literature and discussion in describing rubber articles that a very brief explanation of the manufacturing process seems advisable. Pure rubber, or more properly, crude rubber, is a hydrocarbon derived from the coagulated juices of certain trees and shrubs. This substance is soft, tends to become sticky at about 80° F., and is readily subject to oxidative changes which render it unfit for general use. Vulcanization, or the chemical combination of rubber with sulphur or the chloride of sulphur, is the basic process which gives to rubber the essential attributes of elasticity, tensile strength, and resistance to oxidation. In order to add other specific properties, and also in many cases to reduce cost, numerous inorganic and organic ingredients are added to the rubber in addition to sulphur. The finished rubber article contains from ten to eighty per cent. of rubber, the remainder being made up of the socalled fillers. The most important fillers are the accelerators or sulphur carriers, agents which aid in the completion of the vulcanizing reaction. The accelerators most frequently used are: litharge or lead oxide, antimony pentasulphide, and magnesium oxide. Recently a large number of organic accelerators have been used, among these urea, thiourea, and aniline may be taken as examples (2).

A partial list of fillers is appended in Table I. A compound containing rubber and sulphur only is seldom seen on the market. One exception to this statement must be noted. Rubber may be vulcanized in the cold by means of solutions of sulphur chloride. This method is confined entirely to the vulcanization of very thin sheets of rubber, and in surgical goods this type of products is represented in high grade gloves and good quality rubber dam. There appears to be a widespread belief that red rubber is a pure gum product; this belief is highly erroneous; the red color is due entirely to coloring fillers, and a large part of these rubbers are compounded with antimony pentasulphide as a carrier.

A glance at the list of fillers presented in the table is sufficient to demonstrate that the ordinary rubber article contains a multiplicity of ingredients, many of which are frankly poisonous. The question as to whether these can be dissolved out of a compound may now be considered. A striking piece of work on this problem is the investigation of nursing nipples by Phelps and Stevenson (3). These workers examined thirteen varieties of rubber nipples: seven of these were of black rubber, and six were of red rubber; four of the black nipples and five of the red nipples were found to contain antimony. Under conditions closely resembling those of actual service it was demonstrated that there was an extraction of quantities of antimony of ten per cent. of an emetic dose in normal saliva, and from twenty to eighty per cent. of an emetic dose in saliva of an acidity commonly found in a child's mouth. The figures given in the original work were twice those given here, due to an error in calculation by Phelps and Stevenson.

In order to investigate this matter still further, I have conducted an examination of eleven samples of rubber tubing used in two representative hospitals, a laboratory of pharmacology, and a chemistry laboratory, all in New York. These samples were first analyzed qualitatively for the presence of antimony and lead. The results of these analyses are recorded in Table II. The amounts of the metals are recorded in a semiquantitative way in order to give an idea of the relative amounts present in the various tubes. It will be noted that all of the red tubes contained antimony, and that four of these, or fifty per cent., contained lead in addition. The tubes other than red contained neither antimony nor lead, but this point should not be interpreted as meaning that all such tubings are free from toxic substances. This result is due to the small number of tubes analyzed.

Three of the antimony bearing tubes were then subjected to a test designed to discover whether the antimony was in any degree soluble in an alkaline solution contained in the tube. For this purpose a normal solution of sodium hydrate at 100° F.

TABLE I.

Partial List of Substances Added to Rubber.

Vulcanizing Agents.	*Fillers Improving the Physical Properties of Rubber*	*Coloring Agents*	
Sulphur	Zinc oxide	Organic dyes	
Sulphur chloride	Talc	Lamp black	black
Accelerators (Sulphur Carriers)	Paraffine wax	Lead sulphide*	black
Litharge (lead oxide)*	Ozokerite wax	Ultramarine	blue
Antimony pentasulphide*	Vegetable waxes	Cobalt blue	blue
Magnesium oxide	*Inert Fillers*	Prussian blue*	blue
Organic accelerators	Whiting	Indigo blue	blue
Rubber Substitutes.	Soapstone	Chrome Blue*	blue
Boiled vegetable oils*	Barytes	Vermillion*	red
Oxidized oils*	Magnesium carbonate	Red oxide of Iron	red
Vulcanized oils*	Sublimed lead*	Antimony pentasulphide*	red
Reclaimed rubber*	Asbestos	Cadmium sulphide	yellow
Asphalt	French chalk	Chrome yellow*	yellow
Tar*	China clay	Chrome green*	
	White lead*		

*Poisonous, or may contain poisonous ingredients.

was poured into a length of tube until it was filled, the ends of the tube were pinched off, and the solution was allowed to remain in the tube at room temperature for an hour; at the end of this time the tube was emptied, washed with distilled water, and the resulting solution was analyzed quantitatively for antimony according to the iodometric method of Gooch (4). The results were calculated in terms of tartar emetic in order that their significance might be readily appreciated. Of these three tests, the results obtained from tube 4 are most striking. This tube was in use in a hospital in conjunction with an intravenous saline infusion set, and from this sample an amount of antimony equivalent to ten mgm. of tartar emetic was dissolved to the metre of tubing. Appreciable amounts of antimony were dissolved from tubes 2 and 3. It is highly probable that under conditions permitting a constant circulation of fluid through the tube as pertains when intravenous injection is given, that even greater quantities of antimony might be dissolved by solutions of far less alkalinity.

TABLE II.

Qualitative Analyses of Rubber Tubings.

No.	*Source*	*Type*	*Color*	*Antimony*	*Lead*
1	Hospital	Dakin	Red	+	+
2	Laboratory	......	Red	+++	O
3	Laboratory	......	Red	++	O
4	Hospital	Intravenous	Red	+	+
5	Hospital	Suction	White	O	O
6	Hospital	Drainage	Red	++	++
7	Hospital	Drainage	Red	++++	O
8	Laboratory	......	Black	O	O
9	Hospital	Drainage	Red	+++	O
10	Hospital	Drainage	Red	+	++
11	Hospital	Drainage	Gray	O	O

If we consider the phases of the tubing reaction from this angle, some pertinent features will be apparent. The sulphides of antimony are soluble in alkaline solutions. Solutions of arsphenamine are made definitely alkaline prior to injection. We thus have a potent solvent for the extraction of antimony from the rubber tubing. Rubber compounds are highly variable in regard to their resistance to penetration by water, and it is more than probable that a tubing showing relatively little resistance, will yield considerable quantities of its solvent ingredients to a liquid passed through it. Antimony, injected intravenously, produces the characteristic train of symptoms that result from oral administration nausea, vomiting, trembling, cold sweat, severe depression, diarrhea, cramps, and finally prostration and death. It is a potent poison, and fatal results have been recorded in adults from a total oral dose of three grains, and in a child from a dose of three fourths grain. Symptoms of poisoning may result from the application of an antimony compound to the unbroken skin (5). It would not be surprising if the passage of an alkaline solution through a tube containing antimony would at times dissolve sufficient of the poison to produce various symptoms.

That the danger of poisoning is not limited to rubbers containing antimony is illustrated by the report of a remarkable case from Germany (6). Symptoms of lead poisoning occurred in a baby. The source of the lead was traced to a rubber cloth upon which the child was permitted to lie.

Our interest in this subject is not confined to such cases as are discussed above. Rubber drainage tubes are not infrequently observed to erode through vessel walls and produce serious hemorrhages. The presence of potent tissue poisons in the rubber may possibly be contributory to such accidents. Rubber drains are left in contact with open wounds over long periods of time. We administer intravenous and intraspinal injections, gastric lavage and gavage, and administer rectal alimentation through rubber tubes, and it can be safely estimated that more than fifty per cent. of the tubing used contains antimony or lead in considerable quantities. It is only rational to attempt to eliminate the danger of even occasional accidents from such sources.

From the viewpoint of the rubber manufacturer it is possible to make rubber products free from any of the deleterious ingredients mentioned. These substances are not prerequisite to the compounding of superior rubber products, and such a product should be insisted upon. A tentative specification might be proposed in outline. Rubber goods intended for use within body cavities or in contact with body surfaces should be compounded of high grade new rubber, preferably para or plantation rubber. The use of reclaimed rubber, boiled or oxidized oils, or rubber substitute, should be prohibited. No filling ingredients containing lead, antimony, arsenic, chromium or other poisonous substance should be permitted. Such compounds would be free from the dangers discussed in this paper.

The following method is recommended for the rapid qualitative determination of the presence of antimony or lead in a rubber article:

Cut up about a gram of the rubber into fairly small pieces with a scissors, and place in a porcelain casserole or evaporating dish. Add five to ten c. c. of concentrated nitric acid, and heat gently on an asbestos board over a Bunsen flame. It is best to carry out this reaction under a hood. Evaporate to approximate dryness, and add five to ten c. c. of concentrated hydrochloric acid. Boil gently until chlorine fumes cease to be evolved, adding sufficient hydrochloric acid to make up for loss by evaporation. Do not continue boiling for too long a time, as antimony chloride is definitely volatile. Add one hundred c. c. of water, stir and filter, and pass hydrogen sulphide through the heated filtrate till thoroughly saturated. A yellow precipitate is presumably antimony (or arsenic). The antimony precipitate will dissolve in warm yellow ammonium sulphide solution. A black precipitate is most probably lead. The lead precipitate is insoluble in the ammonium sulphide solution. Further methods of detection can be found in any textbook of qualitative analysis.

SUMMARY.

1. Manufactured rubber contains many substances added in the course of manufacture, some of which may be poisons.
2. Antimony pentasulphide is present in many rubber compounds, and can be dissolved from the rubber by various solvents.
3. It is possible that antimony may at times be dissolved from tubing, by alkaline arsphenamine solutions.
4. The presence of poisonous substances in rubber

compounds destined for medical or surgical use is a menace.

5. Rubber compounds can and should be manufactured for surgical use free from deleterious substances.

REFERENCES.

1. STOKES and BUSMAN: Tubing as a Cause of Reaction to Intravenous Injections, *Journal A. M. A.*, lxxiv, 1013, April 10, 1920.
2. KRATZ, FLOWER, and COOLIDGE: The Action of Certain Organic Accelerators, *Journal of Industrial and Engineering Chemistry*, xii, 317, April, 1920.
3. PHELPS and STEVENSON: The Chemical Composition of Rubber Used in Nursing Nipples, *Hygienic Laboratory Bulletin*, No. 96, p. 55, August, 1914. See also HAMILTON: Industrial Poisons Used in the Rubber Industry, *U. S. Bureau of Labor Statistics*, Bulletin 179 (1915).
4. GOOCH, F. A.: *Methods in Chemical Analysis*, p. 309, 1912. (The method was varied slightly, using N/40 iodine solution.)
5. WITTHAUS and BECKER: *Medical Jurisprudence*, vol. iv, p. 356, New York, 1911.
6. UTZ: *Gummi Zeitung*, xxviii, 322; *Chemical Abstracts*, viii, 1214, March 20, 1914.

30 WEST SEVENTY-FIRST STREET.

THE MEDICAL STUDENT'S PROBLEM.

BY GEORGE H. HYSLOP, M. D.,
New York.

Professor Stockard, of Cornell, defends the socalled lay professor in his article in the *Journal of the American Medical Association* for January 24, 1920. His position is a strong one.

To the student it matters little whether his instructor in anatomy, physiology or chemistry has a Ph.D. or M.D. degree, provided the instructor really teaches his subject as it should be taught to a medical student. Therein lies the difficulty. The clinical man, perhaps, has one concept of how such subjects should be presented to beginners. He may, in his emphasis of the practical details, deprive the student of much valuable knowledge of purely scientific problems. On the other hand, the doctor of philosophy who has become absorbed in research work on a subject will frequently unconsciously neglect important practical features. The student runs true to type and is always dissatisfied, no matter how a subject is taught. As a recent graduate, I should like to present my observations on the teaching of the socalled laboratory subjects—anatomy, physiology and chemistry. I appreciate that I rush in where angels fear to tread, and that among other charges laid at my door will be that of lack of perspective. Be that as it may, the facts in the case should speak for themselves. At least I should not be accused of lack of sympathy for the poor teacher, for I had two years of college teaching myself.

To begin with, a man enters medical school primarily to become a physician. Only a minority of medical students intend to devote their lives to research in either clinical lines, the laboratory, or public health work. The medical school should consider, then, as its first purpose, the training of competent physicians. We will grant that the term, competent physician, implies a man who can not only diagnose and treat disease as he finds it, but one who has a soul restless enough to seek the answer to problems unsolved, and a mind trained to search for the answer. The ideal medical school must do three things: It must first educate the bedside physician. It must stimulate scientific curiosity. It must give the physician training that will enable him to do original work within the limits of his natural talents, and of the opportunities afforded in the average practice. I may be wrong, but I believe the first function to be the most important. However, I do hold that the medical student should, as Professor Stockard might put it, not only be taught facts, but how to comprehend their significance.

Any recent graduate of a medical school will sigh at recollection of the enormous mass of new and seemingly useless facts presented to him in the first two years of medical school. Any comprehending physician will regret, also, his failure to appreciate their significance at the time of their acquisition. The retention in memory of any new facts depends to a great extent upon having the ability to assimilate. In psychological terms, the more associations related to a fact of experience the better the fact remains in the memory. If the associations are properly selected, the fact has a real meaning and can be applied to practical or theoretical purposes. The problem of the laboratory science instructor, then, is so to present his facts that as many of them as possible will be remembered and their significance comprehended by the student who is to use his knowledge in treating disease.

Under ideal conditions the student might be expected to work out for himself the important facts and their significance. But the beginner in anatomy cannot be expected to know in advance what details are of importance from the practitioner's point of view. Nor has any medical student time to indulge an active fancy and browse among books to satisfy an active curiosity. The instructor thus by necessity is guide to the beginner.

Judgment is needed in deciding the amount of attention to be devoted to the theoretical aspects of the subjects. It is my experience that the lay professor, in his enthusiasm for theoretical considerations, usually forgets that his students are not supposed to be training for a Ph. D. degree. It is true that the instructor with a medical degree may slight the scientific problems, but I have found him less prone to err than his brother, the lay professor. However, the chief consideration is not so much bent of mind as it is the presence or absence of the ability to teach. It is not reasonable to assume, as some of our universities seem to do, that because a man is prominent in any field of knowledge he is thereby a teacher, and can impart his knowledge to beginners. Such an assumption is unjust to students, and it is unfair to ask a man who is an expert, say in research, to waste his time trying to do work for which nature never intended him. A well balanced department needs research men. They should receive adequate compensation. But no medical school should pride itself on an excellent department when little heed is given to seeing that its teachers really know how to teach. These things must seem selfevident—yet if I cared to I might easily prove that in three New York medical schools there are several men teaching who are unfit by temperament to be teachers. I never saw a good teacher who did not like to teach, nor have I seen a man neutral toward or disliking teaching who made a good teacher.

To recapitulate, the instructor in a medical school should, first of all, be a teacher. Secondly, the instructor should have a balanced knowledge and appreciation of both practical and theoretical aspects of his subject. That is, he should know what to teach.

What should be taught in the laboratory subjects? Two things: the immediate facts themselves, and any illustrative facts that will make the immediate facts mean something. I shall illustrate by example what I have in mind. Before I go further I wish to make it clear that I am not suggesting that medical students be spoon fed. Nor do I entertain the idea that an instructor should pour upon his students an ocean of clinical facts that the beginner cannot absorb. But the instructors should make their subjects human, and remember that medical students have much to learn in a very short time.

Our class learned the tendon sheaths of the hand. We forgot the anatomy in six months. Two years later we were asked why certain hand infections were dangerous, and when none of us knew we were all rebuked. So we had to relearn what would not have been forgotten had it been properly emphasized. Again, take the venous drainage of the foot and lower leg. The anatomical facts soon faded, and, had it not been for a later curiosity as to the reason for the site of election in varicose ulcers, the anatomy would forever have been a matter of complete indifference and ignorance. I could recite a hundred such instances from the experience of classmates.

We all agreed that our labor in anatomy would have been more fruitful of permanent knowledge, as well as more pleasant in acquisition, had we been given illustrative facts to implant in our memories the important anatomical details. Professors may assure us that details are important. Students may admit the truth of the observation. But the human mind will not retain what it cannot use. In the attempt to absorb a hopeless assortment of seemingly useless and uncorrelated details, the poor medical student literally sloughs from his mind much that is good and useful. He may later relearn. Usually he does not relearn—at least, that is my experience. What is the instructor's superior information for if not to assist the student in selecting details of significance? Take neural anatomy. It is difficult, but the important facts can be so taught that the average physician can remember them and use them. Actually, the subject is so taught that the student receives a profound yet needless conviction that the neurologist can become what he is only by the grace of God. I am no neurologist, but on two occasions I helped some classmates review for their examinations in the subject. After the coaching, neurology was surprisingly less of a mystery and horror.

Take chemistry, for instance. In one school of my acquaintance, the premedical and first year courses are taught by a staff of very good chemists. One man is a metallurgist; another is an electrochemical expert; a third is interested in dyes. Not one has, or seems to have, an ability to give his students any medical background to the subject. I appreciated what I learned about dyes and metallurgy. But it was not until in another school where I repeated the course in organic chemistry under a man who had at least been in the atmosphere of hospitals that I either appreciated or retained much of what I had formerly learned and promptly forgotten because it meant nothing. In physiology the same principle held true. Our class was overwhelmed beyond the point of tolerance with details as to the fate of alanine, and we learned all we could acquire about calories. We had a very eminent physiologist instructing in nutrition. But we never learned from him how gastric secretion in infancy differs from that in adult life. We forgot what we were taught because it could not be used, but had to find out and learn for ourselves the things we needed to know.

Students come to medical school to learn. Instructors are paid to teach. If a man is graduated from medical school, and is ignorant of things he needs to know to practise medicine, the school should look at the mote in its own eye before it casts the beam from the eye of the student. Utmost care should be given to the management of the courses that introduce a student to medicine. Upon their successful teaching depends the attitude of the student toward all he meets in his later career. But in addition to giving the student an attitude, it is only right to expect that the courses be so taught that the student learns the maximum of facts needed by the physician.

Progressive Muscular Atrophy, Charcot-Marie Type.—Dr. Gustavo Artom (*Archivio generale di neurologia e psichiatria,* March, 1920) presents a full study of this type of progressive muscular atrophy. He begins with the report of four cases in the same family, three of which were studied clinically, the fourth also coming to autopsy. The Charcot-Marie type was found in each instance clearly distinguishable from any other form with which it might have been confused. The course of affection of the muscles, the segmental rather than mass atrophy, and the objective disturbances of sensibility helped to distinguish it. It must be differentiated from the Aran-Duchenne myelopathic type of atrophy, from luetic muscular atrophy, from the chronic form due to anterior poliomyelitis, from polyneuritic atrophy, and from interstitial hypertrophic neuritis. He discusses the literature which has appeared upon this form of muscular atrophy before and since it was definitely described by Charcot and Marie. It has been studied in regard to sex and age incidence, familial appearance, course of symptom development, clinical manifestations, such as reflex disturbances, response to electricity, subjective and objective sensibility, and in its pathological anatomy. A full report of macroscopic and microscopic findings in the author's case is given. He argues that his findings force the conclusion more and more that this is a distinct entity among other forms of muscular atrophy, but that it represents a syndrome and not a separate disease. Three types may be distinguished. One may be called a spinal neuritic type, another is the myopathic type, and the third is the chronic neuromyopathic type. The etiology should have weight in distinguishing whether the muscular atrophy or a muscular dystrophy is in question.

Editorial Notes and Comments

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Weekly Review of Medicine.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, SATURDAY, FEBRUARY 19, 1921.

PUBLISHER'S ANNOUNCEMENT.

The New York Medical Journal, incorporating the Philadelphia Medical Journal and the Medical News, is in its seventy-eighth year. Through all those years it has never failed to take a leading position in the interests of medicine and surgery in America, and has always received the cooperation of the leading men in the profession.

Beginning March second the New York Medical Journal will be published semimonthly, on the first and third Wednesdays of each month. It will be enlarged, greatly improved, and its typographical appearance will be in keeping with its high character. A careful consideration of the opinions expressed by our subscribers and contributors, concerning the advisability of the proposed change, convinced us that we could best serve our clientele by increasing the size of the Journal and issuing it twice a month.

Our two issues a month will contain all the new material of value, from contributors of high standing in the profession, that the busy practitioner has time to read. This change will be a step forward in the field of medical publishing. We ask our readers to judge for themselves by a careful survey of our next issue, dated March second.

A. R. ELLIOTT PUBLISHING CO.

PHYSICIAN AUTHORS: DR. JOHN DUNCAN QUACKENBOS.

Sometimes literary work, as well as the literary gift, is inherited. This was what happened in the case of Dr. John Duncan Quackenbos, of New York city. Although Quackenbos got his medical degree in 1871, at the College of Physicians and Surgeons of New York, he was so situated that it was not expedient for him to begin practising until many years later. Instead, he continued the work he had begun in 1870, that of an instructor at Columbia University, in order to assist his father, George Payne Quackenbos, the educational author, in a mass of work of a literary nature. This was necessary, owing to the ill health of the elder Quackenbos, which made it impossible for him alone to reduce to readable volumes a mass of material he had collected for schoolbook purposes. When the elder Quackenbos died, in 1881, the responsibility for revising and editing several of his works, which were little past the embryonic stage, rested upon the shoulders of the son. Singly and together the father and son wrote a large number of textbooks that made their names familiar practically to every student in the schools of America for several decades. Several of those volumes are still in use in public schools and colleges.

At Columbia, where he had been graduated in 1868 (with first honors), Dr. Quackenbos was first an instructor in history and its philosophy, rhetoric and belles lettres, with courses there and at other institutions in psychology and the aesthetics of literature. In 1884 he was appointed adjunct professor of English language and literature at Columbia, and in 1891 became professor of rhetoric in the same university and at Barnard College. College work naturally was more compatible than medical work with such literary labor as it devolved upon Dr. Quackenbos to do, but the doctor did not lose his interest, nor entirely his connection, with the healing art. He continued as a Fellow of the Academy of Medicine and as a lecturer on physiology and dietetics. It was not until 1894, when he had attained the age of forty-six, that Quackenbos resigned from all school work and returned to his medical studies and practice, in New York and New Hampshire, specializing particularly in nervous and mental diseases. He has a world wide reputation for his advanced experiments in mental therapeutics, and has written several volumes bearing on this subject. These include *Hypnotism in Mental and Moral Culture* (Harpers, 1900); *Hypnotic*

Therapeutics (Harpers, 1908); *Body and Spirit* (Harpers, 1916); *Psychic Influence in the Home* (1906); *The Psychology of Happy Marriage,* and *The Psychologic Proof of Immortality.* This specialization in mental therapeutics, incidentally, explains why Dr. Quackenbos, at the age of seventy, turned novelist. His novel, *Magnhild,* is a psychic love story, "an analysis of the tender emotion in its higher subconscious inception and derived bodily expression, and in such portrayal combines romance and reality in equitable proportions," as the author says in his foreword. The eternal question, "What is Love?" is answered from the psychic viewpoint, and in the final chapters the reader is made acquainted with the possibilities of telepathy and the mysteries of supernatural communication. The psychological facts presented in *Magnhild* are based on occurrences experienced personally by the author during more than twenty years of practice, and the observation of some fifteen thousand cases. The scene of the story is laid partly in New York city and partly at Lake Sunapee, in the New Hampshire hills, where Quackenbos has his summer home.

The volumes which he produced during the college period of his career number some twenty standard educational works on literary and scientific subjects. The first of these was Appleton's *History of the World* (1876), an octavo of five hundred pages covering the ground investigated in his class room. Dr. Quackenbos then conceived the idea of a textbook of universal literature, and Harper & Bros. published the first volume, *An Illustrated History of Ancient Literature, Oriental and Classical,* in 1878. The work of going on with the series was abandoned. His next volume was a *History of the English Language,* published in 1882, and Appleton's *Physical Geography* (1887) came next. This volume was for many years a part of the curriculum at Rugby. Appleton's *Physics* was published in 1889, and *Practical Rhetoric* appeared in 1896. This was the epitome of a three year course which Dr. Quackenbos conducted at Columbia. He also compiled several school geographies for special States. In the late nineties Dr. Quackenbos gave twelve lectures in a Madison Avenue church (New York), on the evidences of revealed religion and the preeminent claims of Christianity to the consideration of man over revived Oriental religions and the isms of the day. These received notable commendation from orthodox sources and were published in book form, under the title of *Enemies and Evidences of Christianity,* by the Methodist Book Concern, of New York.

Aside from his novel and his books on mental therapy, Dr. Quackenbos has done considerable other writing since he returned to the medical profession. He is a well known naturalist and sportsman, and has turned out some notable essays on fishes and fishing. A volume, published in New York in 1916, on the brook trout and its genealogy, was widely read and was said by London critics to be comparable in style and interest to Izaak Walton's *Compleat Angler.* He has written many articles for medical journals and monographs for the New Hampshire Department of Agriculture on a wide variety of subjects.

Quackenbos comes of one of the oldest New York families. The Quackenbos or Quackenbush family (originally Van Kwakkenbosch, meaning "of the quaking bush") springs from a common ancestor, Pieter van Kwakkenbosch, a graduate of the University of Leiden, who emigrated from Oestgeest, Holland, to Niew Amsterdam (New York) about 1650. Members of this Dutch patrician family filled important civil offices in the Netherlands from the time of Aelbert van Kwakkenbosch, of Leiden, who fostered the birth of Dutch liberty under Mary of Burgundy, and whose son, Derick, or Dirk, so gallantly supported the cause of Mary's grandson, Charles V of Germany, against Francis I of France, as to receive in the distribution of favors at the peace of Cambray in 1529 the coat of arms of which the family is justly proud. Dr. Quackenbos's grandfather, Dr. George Clinton Quackenbos, was a prominent physician in New York and a nephew of Governor DeWitt Clinton.

NEGLECTED TREASURES.

Occasionally at a meeting or congress, some fine models are shown illustrating anatomy or pathology. They have cost the worker endless trouble and expense, yet he is quite repaid by the eager interest his confrères bestow.

After displaying them at various meetings they are put away at his house. He is always meaning to give some finishing touches, then to present them to a medical museum. But scanty leisure and rapid-footed Death defeat the intention. Careless custody or unseemly dust attack, and the collection becomes damaged and forgotten. There is a fine collection of wax masks illustrating cancer and radium treatment just now in New York, waiting—waiting—for what?

Fortunately, there exists at the Royal College of Surgeons, London, a man who is sure to hear of any good work, and wants it immediately to adorn his beloved museum at the college. So when the beautiful sections and dissections on which Onedi, of Bucharest, had founded his *Anatomy of the Nose and Accessory Sinuses,* were offered for sale in

London, Arthur Keith enthusiastically described the collection as the finest on this subject in the world, and modestly suggested as its fittest home the college museum. Negotiations went slowly—unfortunately, they always do—but Sir St. Clair Thomson and Mr. Philip Franklin procured the necessary fifteen hundred dollars.

There are four hundred and fifty specimens, and it will cost a good deal to mount, label and catalogue, but the collection is of great value not only to the laryngologists but to all those who have to do with surgery of the head or brain. Anyone who saw surgeons from all parts of the world enjoying Professor Keith's conscientious and dainty work on war specimens may be sure that such work acquired will not be allowed to grow dusty or be relegated to dark corners.

It would be a good idea to send a declaration form around to American doctors, asking them to state nature and value of things they have which would stir the student to appreciation of and gratitude to the doctor who has toiled, whether on book or drawings or models. This should be done before the voyage of Life is over and the harbor of Death entered, for at this place there are the hindrances of grief and greed and legal formalities: the right disposition of treasures is often hindered, and the medical world deprived of a glowing pleasure and profit.

MYOCARDITIS AND ENDOCARDITIS IN DIPHTHERIA.

It is generally admitted that a latent myocarditis is one of the causes of sudden death in both typhoid fever and diphtheria. This latent evolution of the process is frequent, and in children it may be said to be the rule. The myocarditis progresses silently, and the softness of the pulse is hardly sufficient to attract the observer's attention to the heart, while auscultation, minutely carried out, will not detect any cardiac disturbance. Then collapse and syncope suddenly supervene. Diphtheritic myocarditis has been the object of much study, both pathological and experimental. Some observers have especially noted interstitial lesions, others parenchymatous lesions, while still others maintain that the process is both interstitial and parenchymatous. Vincent and Meyer have demonstrated that diphtheria toxin may act upon the nerve filaments and motor plaques of the heart as well as on its muscle. Vincent found marked lesions of neuritis, degeneration of the cardioaortic plexus, and granular changes in the cells of Wrisberg's ganglions, and he maintains that the neuritis of the cardiac plexus has its own individuality and may be responsible for the cardiac phenomena.

The cause of the sudden onset of the symptoms is the depth at which the lesions are seated and their rapid evolution, the heart becoming paralyzed before the myocardium has had time to undergo repair. The diphtheritic toxin thrown into the general circulation reaches the heart by the arterioles, bathes the intima and muscular fibres, setting up an inflammation of the cardiac muscle and vessels. The latter then became occluded by thrombosis, the blood becomes extravasated in the intervals of the vessels, there forming small apoplectic foci; the muscle undergoes vitreous or granular degeneration. This process of degeneration and atrophy abolishes, element by element, all that contributes to the cardiac functions. The contractions become irregular, the ventricles do not empty themselves, the circulation becomes slow, the heart dilates, clots form in its cavities, and the efforts made by the organ are powerless to overcome the obstacles which have progressively accumulated. The cardiac contractions then cease, syncope occurs, and death from paralysis of the myocardium ensues. The myocarditis, having undergone its evolution in silence, only manifests itself by a cardiac thrombosis and sudden arrest of contraction. Therefore the myocarditis plays a certain part in the genesis of the accidents occurring before the advent of sudden death.

As far back as 1871, Labadie-Lagrave and Bouchut described diphtheritic endocarditis with pulmonary embolus as a consequence. Their conclusions were sharply opposed by Parrot and Blau-Verdeney, who maintained that the inflammatory lesions were the product of fibrous transformation of small hematomata developed on the mitral valves during early life, perhaps even during intrauterine life. The theory of endocarditis in diphtheria was then forgotten until Marjan, Deguy and Weill published their studies on cardiac thrombosis. They described an endocarditis—not of the mitral valves, but of the apex—and by bacteriological examinations discovered a diplococcus in both the clots and the blood. These observers, therefore, concluded that the cardiac accidents were due to a metadiphtheritic diplococcal septicemia.

More recently, Butruille, of Lille, found in one autopsy slight leucocytic infiltration of the endocardium; in another the lesions were more deeply seated, the leucocytic infiltration more marked, the endocardium was thickened and hyperemic, while the endothelial cells were proliferating. In a third autopsy the endocardium itself was not involved, but the subendocardial stratum presented lesions of myocarditis in all their intensity. From these studies and others, it is clear that diphtheritic endocarditis actually exists and plays a part in the formation of thrombus and embolus. Consequently, it can be the cause of sudden death.

The degree and constancy of cardiac changes clearly show that they play the leading part in sudden death during convalescence from diphtheria. They explain the pallor of the face, changes in pulse and cardiac murmurs, increase of cardiac dullness, and death from syncope. But, although these heart lesions play an important part in sudden death, in some cases it must be admitted that myocarditis alone is in play when the symptomatology is reduced to cardiac disturbances only. The development of embolic accidents should suggest the diagnosis of apexial thrombosis, but, in general, the disturbances are much more complex. Clinical observation and pathology are in accord in showing that all the major viscera are involved and the extreme importance of disturbances of the nerve centres and vasomotor and cardiac nerves, the result of diphtheritic intoxication, must not be overlooked.

THE PASSING OF THE GREEK K.

Fifteen years ago the medical educational circles of New York, and other eastern medical centres, were stirred by quite a controversy as to the necessity of Greek as the language of medicine. At the time the controversy waxed warm, and the pages of the NEW YORK MEDICAL JOURNAL teemed with communications having to do with the promotion of purity in medical terminology. Since then, as before, complaints have been frequent that many of the medical expressions in vogue are incorrect and hermaphrodite in nature. Onomatological corruption is the besetting sin of medical literature. But it is of the letter K we would speak, and despite all that has been said and done it would appear that the Greek K is to be replanted with the plebeian C. Among a few thoughtful medical writers there will always be a certain amount of discrimination in the use of these letters. The employment of the letter C, instead of the letter K, in terms of Greek origin, has become more or less established, and all protests against the bastardization have been futile. This substitution leads to confusion, not only of spelling but also of articulation, especially when C is followed by the vowels *e* and *i*, which suggest to the ear the soft sound of S, instead of the hard sound of K, of the initial syllable of Greek terms.

In words of which K is initial its use is gradually disappearing; the present day physician, for instance, writes cacodyl. And, not to be inconsistent, terms commencing with kata, kako, kephalo, and other Greek prefixes, have been superseded by terms having C as the initial. These prefixes are seldom used today, and the student will find a large number of terms undergoing this transition. While recognizing that science is progressive, and if terminology is to keep pace with science and express intelligibly what is meant, it must eventually submit not to the laws of classical orthography, but to the demands of the times. And as literary curiosities these changes may excite a smile or a sigh, according to the temperament of the writer, the fact remains that the Greek K is on its way out.

A WICKED COMFORTER.

Sir James Cantlie perhaps had some early experiences with those irritating men called "Job's comforters." At any rate, he is dead against any comforters at all, especially for babies. He would like to make their selling illegal, by Act of Parliament. When he meets a baby sucking one, he throws it away and gives the nurse sixpence to enable her to prove what had happened. He once traveled with two women, each with a baby and a comforter. He remonstrated in vain. Just before getting off, he seized a comforter with each hand and threw them out of the window, and was amused to see the mothers shaking their fists at him as the train left. We wonder how he would like the screw of rag dipped in sugar and water, which many babies still enjoy, or the custom of the nurse or mother with an unwholesome mouth who tests the temperature of the bottle by sucking the nipple.

A CORRECTION.

In Dr. John J. McNulty's article on Fatigue—Endocrine Weariness, which appeared in our issue for February 12th, a typographical error occurred which altered the meaning the author wished to convey. The last paragraph on page 288, second column, should read as follows:

Let us here state that glandular substances, in the light of present day therapy, should be given as desiccated substances containing all the properties of the gland and should be given by the mouth, as internal secretions and enzyme substances administered by way of the alimentary canal gather and are reinforced, in transit, by cobodies, or reinforcing bodies, which does not occur when these substances are given hypodermically.

Obituary.

WILLIAM H. WELCH, M. D.,

of Philadelphia.

Dr. William H. Welch, specialist in contagious diseases, died in Philadelphia on February 8th, at the age of eighty-three years. He was born in Bethlehem, N. J., and was a graduate of the University of Pennsylvania Medical School, from which he obtained his degree in 1859. During the Civil War he took care of the wounded in the Chestnut Hill Hospital until the Battle of Gettysburg, after which he was ordered to treat the wounded at Gettysburg, Pa. Dr. Welch was chief resident physician at the Philadelphia Hospital for Contagious Diseases from 1870 to 1903, after which he held the newly made position of chief diagnostician and consultant to the Bureau of Health of the City of Philadelphia. In this work he was active until his death. He was also clinical professor of contagious diseases in the Graduate School of Medicine of the University of Pennsylvania. He was a former president of the Philadelphia County Medical Society, of the Medical Society of Pennsylvania, and of the Philadelphia Alumni Association of the University of Pennsylvania. Besides being a frequent contributor to medical periodicals, Dr. Welch was the coauthor, with Dr. Jay F. Schamberg, of a much appreciated treatise on the acute eruptive fevers, in which the fruits of his extensive experience in this special field of practice were made available to the profession at large.

◆

News Items.

Southern Medicine and Surgery.—The *Charlotte Medical Journal* has changed its name to *Southern Medicine and Surgery.*

North Carolina Medical Society.—The annual meeting of this society will be held at Pinehurst, on April 26th, 27th, and 28th, under the presidency of Dr. Thomas E. Anderson, of Statesville.

Harvey Society Lectures.—Dr. A. N. Richards, professor of pharmacology, University of Pennsylvania, will deliver the seventh Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, February 26, 1921. His subject will be Kidney Function.

Asks Ruling on the Prescription of Beer as Medicine.—A ruling as to whether physicians can prescribe beer for sick persons under the terms of the Prohibition Enforcement act has been asked of Attorney General Palmer by the Treasury Department. The argument was advanced that beer had a lower alcoholic content than wine and possessed valuable medicinal properties.

Service Hospital at Creedmoor.—The House of Representatives has passed a bill authorizing the Treasury Department to take over the New York State Hospital, to be built at Creedmoor, Long Island, and use it in caring for exservice men. The hospital at Creedmoor is to be built by New York State at a cost of $3,000,000. It is to be leased to the Government, and at the end of ten years the hospital is to revert to New York State.

Clinical Conferences on Mentally Handicapped Children.—The Mental Hygiene Committee of the Public Charities Association of Pennsylvania has arranged a series of five clinical conferences on mentally handicapped children, including gifted, average, delinquent and defective types. The first of these conferences was held on Friday, February 18th. The topic considered was uses and limitations of new intelligence tests, presented by Norbert J. Melville, assistant director of the committee. The second was held on Saturday morning, February 19th, and will be repeated Saturday, February 25th. The other conferences will be held on succeeding Fridays and Saturdays during March.

Philadelphia College of Pharmacy Centennial.—The Philadelphia College of Pharmacy and Science has issued invitations to the centennial celebration of Founders' Day, to be held in the auditorium of the college, Wednesday evening, February 23d. Joseph W. England is chairman of the committee of the board of trustees; Charles H. La Wall, chairman of the committee of the faculty, and Ivor Griffith, chairman of the committee of the alumni association.

Hygiene Congress Abandoned.—The International Hygiene Congress, which was to have been held in Geneva, Switzerland, next May, has been abandoned. Six hundred delegates from all parts of the world were expected to attend, but on account of the low value of the currency of many countries and the high value of the Swiss franc, it was impossible to get Germany, Austria, Hungary, Czechoslovakia, Jugoslavia, Poland, Rumania and Bulgaria to send delegates, while it was difficult even for France, Italy and Belgium.

French Births Exceed Deaths.—France's birth rate took a big jump upward in 1920, and, for the first time in many years, births largely exceeded deaths. Detailed figures are only available for the first six months of the year. They cover the whole country, including Alsace-Lorraine and the liberated departments, and show 424,668 births, against 356,722 deaths, or nearly 68,000 more births than deaths. The corresponding period of 1919 figures for the country, without the liberated departments, showed an excess of 120,000 deaths. It is stated that the second half of 1920 fully maintained the showing of the first six months. The marriage rate has increased proportionately. During the first six months of 1920 there were 11,800 more marriages in the Department of the Seine, which includes Paris, than the year before, and almost exactly 11,000 more births.

Personal.—Dr. William H. Stewart has resigned as director of the Department of Röntgenology of the Brooklyn Diagnostic Institute.

Dr. Frederick S. Westmoreland, for fifteen years connected with the Bureau of Hospitals of the Department of Health of the City of New York, has resigned, and will establish an office for the practice of medicine in Spartanburg, S. C.

Dr. Hugh H. Young, director of the Brady Urological Clinic at Johns Hopkins Hospital, who entered the hospital some time ago to recuperate from the effects of the strain he underwent during the war, is said to be improving.

The French Government has conferred the Cross of the Legion of Honor on Dr. Percy R. Turnure, of New York, for "eminent services rendered to France during the World War." Dr. Turnure was in charge of an American Hospital in France in 1915.

Dr. E. A. Reed has resigned from the United States Public Health Service and has opened an office for private practice at 845 Bushwick Avenue, Brooklyn. Dr. Reed served for twenty months as chief examiner and chief of the medical service at U. S. Public Health Service Hospital No. 38 (Polytechnic Hospital).

Typhus Fever Situation in New York.—The third death from typhus fever occurred in New York on Tuesday, February 15th. No new cases of typhus fever were reported on that date. There are thirty-three immigrants undergoing treatment at the Quarantine Station and Hoffman Island, including the fourteen from the steamer *Presidente Wilson.* Added to these is another case from the *Presidente Wilson,* which is being treated at Willard Parker Hospital, and Mrs. Mary Barnett, of Brooklyn, who is in St. Mary's Hospital. All told, thirty-five persons are under treatment at this port.

Encephalitis Lethargica in New York.—Eleven cases of encephalitis lethargica, the socalled sleeping sickness, were reported to the Board of Health on Friday, February 11th, making a total of thirty-nine cases for the first six days of last week, with seven deaths. Two deaths and eleven cases were reported on February 15th. Since January 1st, 179 cases have been reported, with forty-seven deaths. Last year, when the disease was not officially reportable, 654 cases and 211 deaths were reported. Health Commissioner Copeland, while expressing concern over the increased number of cases of the disease, said he did not believe that the situation was alarming. Many new cases were expected in March, however, as the time of greatest virulence of the disease was in January, February and March.

Medical Association of the Greater City of New York.—A stated meeting of this association will be held in Dubois Hall, New York Academy of Medicine, Monday evening, December 21st, under the presidency of Dr. George L. Brodhead. The program will consist of a symposium on pneumonia. The following papers will be read: The Bacteriology and Manner of Infection, by Dr. Russell Cecil; Pathology and Complications, by Dr. Douglas Symmers; The Serum Treatment, by Dr. Walter L. Niles; Circulatory Management, by Dr. Alfred Cohen; Convalescence, by Dr. Harlow Brooks. Discussion by Dr. Hermann M. Biggs, Dr. Edward E. Cornwall, Dr. W. Gilman Thompson, Dr. Emanuel Libman, Dr. Joseph E. Winters, Dr. Warfield T. Longcope, Dr. Nathan B. Van Etten, Dr. J. T. Joseph Bird, Dr. T. Stuart Hart, and Dr. William R. Williams.

Heart Clinic at the Good Samaritan Dispensary.—Through its president, Dr. Louis Faugères Bishop, the Good Samaritan Dispensary announces that it has opened a Heart and Tension Clinic which will be conducted along unique lines. Every patient accepted for treatment will have a complete technical examination, including an orthodiagram, an electrocardiogram, a polygram, a uranalysis, a blood count, and a Wassermann test, also a month's observation of blood pressure, and hygienic and therapeutic tests. A small fee will be charged for the service. It is believed that in this institution, which has been in existence for ninety years and treats sixty to seventy thousand people a year, there is an opportunity to carry on a good work in the prevention and relief of heart diseases, and that by giving a complete examination to all who desire it, many conditions will be discovered in their early stages that are now overlooked.

Physicians Wanted at St. Elizabeth's Hospital, Washington, D. C.—The United States Civil Service Commission announces an examination for the following positions: Senior assistant physician, $2,500 to $3,000 a year; assistant physician, $2,000 to $2,500 a year; junior assistant physician, $1,500 to $1,800 a year. Vacancies in the staff of St. Elizabeth's Hospital, Washington, D. C., will be filled from this examination. Applications will be received by the commission up to and including March 22, 1921.

Death of Emile Bourquelot.—Emile Bourquelot, professor of galenical pharmacy at the Paris Faculty of Pharmacy, died on January 26th, at the age of seventy years. He was recently elected vice-president of the Academy of Medicine and was general secretary of the Paris Society of Pharmacy, head pharmacist of the Laennec Hospital, Paris, a member of the council of Paris University, the Academy of Sciences, the Codex Revision Committee, the Societies of Biology and Mycology, and numerous other scientific bodies, as well as editor of a leading pharmaceutical journal in Paris. He was made an officer of the Legion of Honor in 1905. At the time of his death he was engaged in research work on the biochemical synthesis of the glucosides and saccharides.

Reconstruction Hospital Formed by Merger of Three Institutions.—Park Hospital, at 100th Street and Central Park West, De Milt Dispensary at 245 East Twenty-third Street, and the Clinic for Functional Reeducation at 5 Livingston Place, have been merged into one institution, called the Reconstruction Hospital, whose exclusive field will be the rehabilitation of workers suffering from industrial injuries by the application of war methods. The property and equipment of these three institutions have been turned over to the new hospital, and in addition $500,000 will be spent in extending the present facilities. The Institute for the Crippled and Disabled, at Twenty-third Street and Madison Avenue, will be affiliated with the new hospital. The medical staff will include Dr. Joseph A. Blake, Dr. John A. Hartwell, Dr. Victor G. Heiser, Dr. Irving S. Haynes, Dr. Charlton Wallace, Dr. Charles L. Dana, Dr. Henry Sage Dunning, Dr. John D. Kernan and Dr. Robert G. Reese. It is headed by Dr. W. Gilman Thompson. The activities of the hospital will include scientific research, vocational training, and provision for reemployment, in addition to hospital treatment.

◆

Died.

Beckley.—In Lancaster, Mass., on Friday, February 4th, Dr. Chester W. Beckley, aged forty-five years.

Borsch.—In Atlantic City, N. J., on Wednesday, February 9th, Dr. John L. Borsch, of Philadelphia, aged seventy-five years.

Criado.—In New York, on Monday. February 7th, Dr, Luis Fernandez Criado, aged sixty-four years.

Hatfield.—In Rockaway Park, New York, on Saturday, February 5th, Dr. Frank P. Hatfield, aged fifty years.

Hillman.—In Greece, N. Y., on Saturday, February 5th, Dr. Walter Benedict Hillman, aged fifty-three years.

Swasey.—In Lynbrook, L. I., on Tuesday, February 8th, Dr. Charles E. Swasey, aged seventy-three years.

Welch.—In Philadelphia, Pa., on Tuesday, February 8th, Dr. William Miller Welch, aged eighty-three years.

Book Reviews

AVIATION MEDICINE.

Aviation Medicine in the A. E. F. Prepared in the Office of the Director of Air Service. Washington: Government Printing Office, 1920. Pp. 322.

The day is surely coming when man, of his own ardent desire, mechanically unborne, will defy wind and cloud and the shocks of height, his upward flight provoking no more amazement than the airship of today. At present, the land of up above being so little known, the ignorance of the travelers so great, wise doctors have themselves to go to school before they can say what men shall fly and be prepared for the dangers of flight.

And how would you pick your birdman? ask pompous heads of departments who will not consider that the Ornithological Department of the War Office is still very, very callow. Major Patten, having perhaps in mind such questioners, humorously says the aviator "is a tall, short, stout, slim, blond, brunette, quiet, nervous, languid, alert, reckless, conservative individual." Tested by purely physical standards, Guynemer, the marvelous French flier, would have been disqualified, but this tall, slender youth, with unforgettable eyes, embodied that subtle something which exists in all master men.

Moreover, many who seemed absolutely fit were knocked out by a slight accident. We all know them, damaged boys who were always taking aspirin and who were scared at night by the ever-recurring dream of an awful flight backwards, then a fall into tangible darkness. There are many still in the hospitals, but peace has given breathing time to learn the possibilities of safe flight.

Perhaps the flight surgeon has the most responsible position. He has to have a thorough knowledge of the internal medicine, some knowledge of the principles of physiology and psychiatry, and be expert in eye and ear examinations. He has to be firm and yet adaptable in meeting the many objections fliers make to being entered as being disqualified for a time or permanently.

The chief war functions of the Medical Research Laboratory was to furnish accurate knowledge to the flight surgeon and all concerned in the care of fliers. The difficulty was that a man might be absolutely perfect physically, yet be of the hypersensitive to motion type, a disqualification which might disappear after training. Being able to see well did not mean good air sight, which is an intuitive interpretation of what is seen. There were many unable to acquire this who had to resign or were shot down by the enemy. Sometimes the deficiency was mental.

The necessity for constant examination was imperative, because the fliers could not be trusted to report when unfit. Guynemer was seen by his comrades to be in no condition for flying when he took his last flight, and his friends telephoned to his old commanding officer in Paris to come. He arrived half an hour after Guynemer had left. Lieutenant Kurtz, too, had confided to a brother officer that he had had fainting spells in high flights. Soon after, his Nieuport dropped into a vrille, crashed and caught fire, ending a life which might have been spared by medical attention.

The book is interesting not only to doctors and aviators but the general public, who know not the aerography nor the risks to be faced. The total accident loss in training for the United States alone was 446. When the Pilgrim Father days of these air travelers are over, we shall be able to say with Spenser:

> How oft do they with golden pinions cleave
> The flitting skies, like flying pursuivant,
> Against foul fiends to aid us militant.
> They for us fight, they watch and duly ward,
> And their bright squadrons round about us plant.

SLEEPING SICKNESS.

A Naturalist on Lake Victoria. With an Account of Sleeping Sickness and the Tse-Tse Fly. By G. D. Hale Carpenter, D. M., B. Ch. (Oxon), Uganda Medical Service; Fellow of the Linnean, Entomological, and Zoological Societies of London. With Two Colored Plates, One Map, Charts, and Eighty-seven Illustrations. New York: E. P. Dutton & Co., 1920. Pp. xxiv-333.

Just a little over sixty years ago and Lake Victoria was unknown to the civilized world until J. H. Speke then discovered it. Livingstone came along in 1874, and Stanley in 1877. Its islands were beautiful, its prospects good, its natives not averse to civilization. No human foe, no ferocious beasts, no earthquakes or devastating storms cleared the fairest of the islands. An enemy, against whom guns nor swords nor gas availed, was the small tse-tse fly. How he came there, what he has done, and when he means to go, the Lord only knows.

What is the cause of this sleeping sickness he causes? Briefly, it is a minute one celled creature called a trypanosome, belonging to the lowest order of animal life, which is, as it were, inoculated by the bite of a blood sucking fly, the tse-tse, or *Glossina*.

Is it likely to invade our coasts? No; the disease is entirely confined to tropical Africa. John Atkins, ship surgeon, mentions it in 1742, in his *Physical Observations on the Coast of Guiney*, and Gordon Cumming, in 1850, says that he found on the south bank of the Limpopo the famous fly whose bite is fatal to animals. Livingstone also, in 1857, speaks of losing forty-three oxen in one journey from its bite. He says: "The bite was perfectly harmless to man and wild animals." This is the genus Glossina morsitans, founded in 1830, when Wiedemann described a new species of fly from Sierra Leone. In 1901 an Englishman in charge of a steamer on the Gambria came into the Bathurst Hospital for fever, and Dr. Forde found an organism unknown to him in the patient's blood. The man was sent to Liverpool, and there Dr. Dutton recognized the organism as a trypansome. It was also found in the blood of two sufferers from sleeping sickness and called trypanosomiasis.

The Royal Society sent out a commission to investigate the spread of the disease in Uganda in 1902. It was suggested removing the population, but the natives refused, and the end of 1903 saw over ninety thousand deaths; whole villages were wiped out. The aid of the native chiefs was sought, and compensation for land given. Segregation camps were formed, and soon the whole of the once flourishing lake land was desolate and given over to the tse-tse fly, who had triumphantly taken over two hundred thousand men in five years.

Fresh alarm in 1909! Acute trypanosomiasis cropped up in Nyassaland, Northeast Rhodesia, and Portuguese East Africa. The invalids had not been in the neighborhood of Glossina palpalis. It was either gambiense carried by morsitans, or rhodesiense in a nonlethal form. Indeed, a case of this was recorded as the first to be cured by treatment in 1919.

Well, here was the infected land cleared of natives, yet the fly continued its infectivity. Birds, reptiles, flowers, moths, and all animals save the Situtunga antelope had been examined as a possible host. It was found that these latter lived in most intimate association with the fly among the shaded forests at the water side. The fly obtains the trypanosome from the antelope and inoculates the animal with the trypanosome. Each without the other is harmless, for the trypanosome cannot multiply indefinitely in the fly, and requires to live for a cycle in mammalian blood.

It seems simple enough. Kill the antelope. He is somewhat unaccommodating, is fleet of foot, abounds everywhere. Make, then, artificial breeding grounds for the glossina, then suddenly descend on him. The numbers would quickly be reduced. This has been attempted, but the work is slow. Meanwhile, the tse-tse fly practically rules the lake islands of Bugulla, Kome, Damba, and others.

Professor Hale Carpenter went out in 1910, under the auspices of the Tropical Diseases Committee, and stayed on the depopulated Sesse Isles to study glossina, but eventually fixed on the large island of Damba, though in 1912 he went on to Bugulla. In August, 1914, he joined up with the troops, and did not return to Uganda until November, 1918.

These few crumbs of information will be enough to attract those interested in the death of the tse-tse fly, and how Professor Carpenter proposes it, after he has told us very lucidly all that scientific men can tell about it in sixty-six pages.

Now for Lake Victoria. He is all ears and eyes, grows to understand what the animals say, knows the portents of storms, thinks it fun to find out the mimetic efforts of insects, disburses us of the idea that every snake is poisonous and longing to kill us; that every hippo is bent on charging us. The story of how all life preys one on the other and deceives, how trees and plants and animals die off an island. How crocodiles decrease when the enormous monitor lizard (Varannus niloticus) abounds, for the simple reason that the lizard, often six feet long, is fond of eggs. He mentions also the slightly poisonous snake, who does not strike and let go, but mouths its prey, slightly poisoning it, and then eats it at leisure.

In the preface, Edward B. Poulton says the most important discoveries are those which Carpenter has added to our knowledge of Papilio dardanus, and, above all, the breeding experiments which brought final confirmation to the conclusions of Dr. Karl Jordan on the wonderful series of mimetic butterflies here proved to be forms of a single species—Pseudacraea eurytus of Linnaeus.

But nothing in creation was too small for the keen eyes and innocent delight of the author. Read his joy ride to Nkosi, the southernmost isle of the Sesse group, after a year in research after flies on Bugulla. It is easy to understand the excitement of his party of fifteen packing the one big canoe for four days on a glorious, calm, sunny morning. The pictures of the islands create a certain kind of wistfulness in the town dweller, and happy is the author who by trick of pen can make the tired reader really think he sees the marvelously beautiful wonders of Lake Victoria.

HYGIENE.

Hygiene. By W. Wilson Jameson, M. A., M. D. (Aberd.), M. R. C. P., D. P. H. (Lond.), Medical Officer of Health and School Medical Officer for the Urban District of Finchley; Lecturer on Sanitary Science at the Hackney Institute; Examiner in Hygiene to the National Health Society; and F. T. Marchant, Assistant in the Department of Hygiene, University College, London; Lecturer on Elementary Science at the National Health Society. With Eighteen Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. vii-404.

This is not a fancy volume for expectant mothers or enthusiastic citizens or whole hearted teachers. True, babies figure in it, even before birth, but wells and springs, cesspools, drains, tanks, sludge, housebuilding, diet and alcohol come first, before the questions of infantilism, maternity, child welfare and school matters. It is indeed a serious book, and, if well read, calculated to make a man alert and ready to fight all the evils engendered by selfish man and epidemics, by ignorance and neglect.

The author begins with the geology of water supplies, and how to get enough of it wherever needed — drainage, sewage, drinking and washing. Naturally, fresh air and sunlight come next, then heating and lighting. You cannot even escape from all these laws and regulations in a canal boat, for it is a house. You are told what ought to be done in an epidemic, in the pursuit of dangerous trades, though why anyone should want to pursue such a trade is a mystery. Common diseases are thoroughly discussed from the medical officer's point of view. The sprightly flea and crawling louse have their share of attention and that very common house fly, who traded on our ignorance for so many years. Vital statistics form a formidable chapter with instructions how to get them, but when obtained, they make such dismal reading that our eyes glint eagerly at the probable duration of life, hoping it will not be very long, especially for the harassed medical officer of health, who has to see that we enter the world under sanitary conditions and return to Mother Earth so well custodied as to burial that, dead, we do no harm.

Section ten is devoted to meteorology, physics and calculations, the latter including such matters as sewer and ventilation calculations and food analysis, though food has section five all to itself, with a whole page on our new friends the vitamines. From all one reads of what man and disease can do to food which has to be prepared, it would almost seem that fruit direct from the tree, uncooked, is the only hope of pure food, or why should the course of any one food as far as the dinner plate be guarded by laws and regulations. Canned and fresh meat from other countries is no longer beyond suspicion. You would not like to give your family onchocerciasis along with the Australian beef, though you knew the intermediate host was probably a stomoxys, hippobosca or tabanid, which only survived the beast a few hours. Sausages are always suspected, though the families who dine off them have no time to detect early putrefaction by boiling a piece in lime water "when a very unpleasant smell will result." Generally this can be ascertained without any boiling, but they are then a few cents cheaper, and hygiene is sad.

The book is, veritably, a *Pilgrim's Progress.* Surely its wise advice and laws should be followed and kept for the sake of the crowd of new babies who daily come into this ill kept world.

THE NEW DECAMERON.

The New Decameron. New York: Robert M. McBride & Co., 1920. Pp. v-183.

The New Decameron is little like the old, except in name. It is less spicy, and much easier to read, and for these and sundry reasons it will probably not be suppressed and so become a classic which our descendants will look for in unexpurgated editions. Like its namesake, *The New Decameron* is a series of tales told by various persons and connected by a thin thread of continuity. In this case the persons are the members of a party which is touring Europe under the guidance of a gentleman with a past and probably with a future, though this volume, devoted to the events of the second day, does not reveal the outcome. The members of the party—all English—are not quite the standard boarding house types, for which one is thankful, though the list does include a spinster schoolmarm, a professor, a selfmade business man, and a poet. To offset these, there are an indeterminate esthete, a lady of fashion, a psychic research worker, a woman doctor, and a "bureaucrat," who are unusual.

The outstanding difference, of course, between the old and new Decamerons, is that in the modern volume sex is not uniformly treated as a subject for comedy. There are several stories which faintly suggest the boisterous comic spirit of our elders on this topic, but compared with Boccaccio they are decidedly lacking in salt. The least unsalted is tucked away in the back of the book, and as a further safeguard is told by the professor and credited to a bishop! Another one is saved, so far as the censor is concerned, by having all parties concerned die unpleasant deaths. The Anglo-Saxon feels the situation is saved somehow if only the various persons do not live to rejoice in their iniquitous proceedings.

Forgetting the connotations, this is an excellent collection of short stories, easy to read at intervals but connected enough so that one is impelled to go on to the next one. There is an exceedingly agreeable detective story among the lot, a story which is not particularly Decameronesque but which is a good story, anyhow. The woman doctor's tale of the young man who was kept from the stage by his family, the girl who intended marrying him for his money, and the grisly denouement contained in the youth's letter after he has killed himself, is the best in the collection. *The History of Andrew Niggs,* told by the master printer, is a short, grim thing which might have been written by Gorky.

Two of the stories, the poet's and the priest's, are in verse, which may amuse the reader if he can get through them. Some parts, like the following, resemble a burlesque of one of the Georgian poets:

> "The lovers came by night to tryst,
> And felt the bitter glaucous mist
> Eat through their ribs ere they had kissed,
> And thought their chance of flight was gone,
> Then sank in sobs upon the stone," etc. etc.

The stories—the prose stories, that is—are written with an admirable brevity and understanding of the technic of the *conte.* *A Player Perforce,* in particular, is as good as De Maupassant.

◆

New Publications Received.

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

UNCLE MOSES. By SHOLOM ASCH. Authorized Translation from the Yiddish by ISAAC GOLDBERG. New York: E. P. Dutton & Co., 1920. Pp. vi-238.

HISTORY OF A LITERARY RADICAL AND OTHER ESSAYS. By RANDOLPH BOURNE. Edited with an Introduction by VAN WYCK BROOKS. New York: B. W. Huebsch, 1920. Pp. xxxv-343.

REMINISCENCES OF TOLSTOY. By MAXIM GORKY. Authorized Translation from the Russian by S. S. KOTELIANSKY and LEONARD WOOLF. New York: B. W. Huebsch, Inc., 1920. Pp. 86.

THE RÖNTGEN DIAGNOSIS OF DISEASES OF THE ALIMENTARY CANAL. By RUSSELL D. CARMAN, M. D., Head of Section on Röntgenology, Division of Medicine, Mayo Clinic; Professor of Röntgenology (Mayo Foundation), Graduate School of Medicine, University of Minnesota. Second Edition. Revised. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 676.

THE ELEMENTS OF PRACTICAL PSYCHOANALYSIS. By PAUL BOUSFIELD, M. R. C. S. (Eng.), L. R. C. P. (Lond.), Physician to the London Neurological Clinic (Ministry of Pensions); Late Demonstrator of Morbid Anatomy, St. George's Hospital; Late M. O. American Women's Hospital for Officers, etc., etc. London: Kegan Paul, Trench, Trubner & Co., Ltd.; New York: E. P. Dutton & Co., 1920. Pp. xii-276.

EMBRYOLOGY. A Laboratory Manual and Textbook. By CHARLES WILLIAM PRENTISS, Late Professor of Microscopic Anatomy, Northwestern University Medical School, Chicago. Revised and Rewritten by LESLIE BRAINERD AREY, Professor of Microscopic Anatomy at Northwestern University Medical School. Third Edition. Enlarged, with 388 Illustrations, Many in Color. Philadelphia and London: W. B. Saunders Company, 1920. Pp. iii-412.

PRACTICE OF MEDICINE. A Textbook. By JAMES M. ANDERS, M. D., Ph. D., LL. D., Professor of Medicine, Medico-Chirurgical College Graduate School, University of Pennsylvania; Consulting Physician to the Jewish Hospital and to the Widener Home for Crippled Children; Officier de l'Instruction Publique, etc. Fourteenth Edition. With the Assistance of JOHN H. MUSSER, JR., B. S., M. D., Associate in Medicine, University of Pennsylvania; Physician to the Philadelphia General Hospital; Physician in Charge of the Medical Dispensary, University of Pennsylvania; Assistant Physician and Chief of Dispensary, Presbyterian Hospital. Illustrated. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 1284.

Practical Therapeutics and Preventive Medicine

A Compendium of Treatment and Prophylaxis, Original and Adapted

Chemical Examination of the Cerebrospinal Fluid in the Diagnosis of Tuberculous Meningitis.—G. Mouriquand and Morenas (*Lyon médical,* December 10, 1920) lay stress on the utility of a chemical examination of the cerebrospinal fluid in cases in which the cell content of this fluid or the general clinical picture may prove misleading. Thus, in a child convalescing from whooping cough and seized suddenly with convulsions and other evidences of meningitis, lumbar puncture yielded a clear fluid with cellular reaction, reduction of albumin, and a marked excess of sugar. Two days later, the fluid showed improvement and on the fourth day the fever and meningeal signs passed off. On the other hand, in a similar case of meningeal syndrome appearing during recovery from whooping cough the cerebrospinal fluid showed, aside from lymphocytosis, an excess of albumin and absence of sugar. The child died, and postmortem examination showed tuberculous meningitis. In another case, a child of eight years had fever, headache, vomiting, and constipation one week before admission to hospital. Examination revealed a positive Kernig's sign, but the reflexes were normal, and there were merely slight photophobia and headache. On lumbar puncture the fluid issued without pressure and after prolonged centrifugation yielded only one lymphocyte in ten microscopic fields. Chemical examination, however, revealed an excess of albumin and only traces of sugar. Similar results were obtained three and eight days later, and meanwhile distinct clinical evidences of meningitis appeared. At the fourth examination there was marked lymphocytosis; the child died the next day, and the autopsy showed tuberculous meningitis.

Cytological and Chemical Examination of the Sputum in the Diagnosis of Asthma and Asthmatoid States.—F. Bezançon and S. I. de Jong (*Bulletin de l'Académie de médecine,* November 30, 1920) assert that microscopic examination of the sputum for eosinophile cells is almost as important in the diagnosis of bronchial asthma as the examination for tubercle bacilli in tuberculosis. The cell content of the sputum is of far more significance than its gross appearance. Charcot-Leyden crystals and Curschmann spirals are of no importance. The examination for eosinophiles is made fixation with alcohol ether or methyl alcohol and staining with hematoxylin eosin. Examination for seroalbuminous exudate is made after fixation with alcohol and staining with polychrome methylene blue. The eosinophile cells in asthmatic sputum may appear either intact or broken, the large eosinophile granulations being in the latter instance clustered outside of the cell. Some of the cells appear like the ordinary polynuclear eosinophiles in the blood—though a few have pyknotic multilobate nuclei; the greater number, however, are mononucleated and resemble either an eosinophilic myelocyte or a lymphocyte laden with eosinophilic granules. In some cells with the granules, the nucleus is small, opaque, and peripherally situated. Finally, some of the cells present the elongated appearance of connective tissue cells, laden with granulations. The presence of the eosinophile cells is of especial diagnostic utility in incipient, obscure cases of asthma. Thus in a patient with paroxysmal cough at night, ascribed to enlarged tracheobronchial glands, sputum showing the typical cell formula of asthma will lead to successful treatment of the previously refractory case. In some dyspneic consumptives, eosinophiles in the sputum point to asthma, thus accounting for dyspnea unexplainable on the basis of the tuberculous lesions in their existing stage. In gassed subjects, sputum examination may show that dyspnea is partly due to asthma and not wholly to pathological changes in the lung tissue. In cases of pulmonary fibrosis with chronic bronchitis, emphysema, and dyspneic attacks associated with exacerbations of bronchitis or temporary bronchopulmonary congestion, eosinophiles will be absent if asthma has no part in the dyspnea. Among men past fifty years with asthmatoid nocturnal dyspneic attacks, some are shown to be true asthmatics, and are amenable to antiasthmatic treatment, while others prove to be cardiorenal cases. Pulmonary edema is shown by the presence of many coarse droplets of seroalbuminous exudate and the absence of eosinophile cells; on the other hand, in the copious sputum of moist asthmatics albumin is absent and a few eosinophiles are found interspersed in a large amount of thin mucus.

Simplified Technic for Local Anesthesia of Tonsils; Intranasal Surgery Without Packing.—W. T. Patton (*Southern Medical Journal,* October, 1920) sprays or swabs the oropharynx with a ten per cent. solution of cocaine until the pharyngeal reflexes are under control, sometimes giving to nervous individuals a hypodermic injection of one fourth grain of morphine a half hour before operation. Then he injects either a novocaine solution, one per cent., with fifteen minims of epinephrine solution, one in 1,000, to one half ounce of the novocaine solution, or Schleich's solution No. 1. Instead of a small sharp needle, or one of the hooked needles, a medium sized, fairly blunt, short pointed needle is used. It is important to have a short point and not sharp. The needle is inserted through the tonsil at its centre, outward and backward, with the idea of placing the point of the needle as near as possible between the capsule and superior constrictor at its exact centre. The needle is shoved through the nonresisting tonsil tissue until slight resistance is felt, which is the fibrous capsule, then just a fraction farther. Then the point is in connective tissue between the capsule and aponeurosis, where the nerve plexus runs. Inject fifteen or twenty minims of the anesthetic fluid. The solution infiltrates all around the capsule, producing neither edema nor swelling. Inject the other tonsil in the same way and wait about two minutes, when the tonsil can be removed with perfect anesthesia.

Patton's practice is, after a submucous resection, to make an incision about an inch long along the floor posteriorly through the membranes, so that any blood can drain out and not cause a hematoma between the flaps. Then he paints freely between the flaps with one of the brain extracts, or with compound tincture of benzoin. He puts the patient to bed, keeps cold compresses on the eyes and nose, and gives a spray of one in 20,000 adrenalin solution. After twenty-four hours the patient is allowed to go about as usual, and the nose is found quite free and normal. It becomes necessary to pack the nose in very few cases. The advantages are said to be: 1. Greater comfort to the patient, who often is able to breathe through the nose continually. 2. Much less reaction to the tissues in the nose. Usually twenty-four hours after operation, if clots are clearing out of the nose, it is surprising to see how little reaction remains. 3. There seems to be less bleeding without packing in most cases, provided we use the adrenalin spray, cold compresses, and keep the patient in a reclining position. The disadvantages are: 1. Occasionally we get a hematoma between the flaps, though this is rare if a counteropening is made near the floor of the nose. If it does occur, it is a simple matter to curette out and again seal the flaps by applying compound tincture of benzoin. 2. A few patients bleed more freely than we like, and it may become necessary to pack, but no harm is done.

Gravity Resisting Ability of the Circulation.—C. Ward Crampton (*American Journal of the Medical Sciences,* November, 1920), in a study of the measurement and significance of the gravity resisting ability of the circulation, presents the following conclusions:

1. The horizontal and vertical blood pressures may differ greatly in the same individual.

2. A rise in systolic pressure on standing indicates efficiency in the gravity resisting ability of the circulation; a fall, the reverse.

3. The increase in heart rate on standing indicates inefficiency in the gravity resisting ability of the circulation in proportion to the increase.

4. Taking both influences into consideration, an index may be determined for convenient use.

5. This index is lowered by various influences among which are fatigue, toxins, the approach of disease and disease itself.

6. This index may be high in good health and also in some diseased conditions.

7. The index may prove helpful in estimating the extent illness is damaging the circulation in the course of disease and in estimating the progress of recovery.

8. This index may indicate the fatigue and the variations of condition in an athlete.

9. The normal range of this value is approximately from fifty to one hundred, although records in this range may be given by sick persons, but high records in sick persons are probably evidences of pathological overtone.

10. Records below zero are evidences of great lack of circulatory power.

11. Comparison of records of two individuals may or may not give much information. Successive records on the same case may give more.

12. The customary single recording of the blood pressure in one position gives no information as to the gravity resisting function of the circulation.

Ambulatory Acute Encephalitis.—J. Comby (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* March 18, 1920) reports a case of epidemic encephalitis in a man aged thirty-two years, in which the condition followed a severe attack of influenza with slow, imperfect convalescence, and was characterized chiefly by diplopia, without marked somnolence. The patient continued his regular office work, but experienced a sensation of weight over the eyes and was weak on his legs and restless at night. There was no fever, and recovery took place within a month. The treatment consisted of mustard footbaths, fly blisters at the back of the neck, mild purgation, and one gram of urotropin daily by the mouth. The interval between recovery from the influenza and the appearance of the encephalitis symptoms in this case was forty days.

Kidney Decapsulation.—Sir T. Horder (*British Medical Journal*) remarks that while surgery in cases of calculus, pyelitis, and other unilateral affections is well developed, operation in true nephritis is still comparatively backward. He gives an account of decapsulation in four cases, two of which were similar and presented typical features and in which complete cures were achieved. In the other two cases the patients were distinctly benefited. Subacute nephritis is characterized by considerable edema, massive albuminuria and urinary casts, and toxic symptoms of chronic uremia. The author affirms that the clinical symptoms of this nephritis distinguish it from arteriocapillary fibrosis and chronic interstitial nephritis and other kidney affections. Decapsulation, while beneficial in other affections, is to be recommended in subacute nephritis.

The Contents of the Stomach.—Elbridge J. Best (*American Journal of the Medical Sciences,* December, 1920) outlines a method for the fractional stomach examination which makes it possible to complete all the tried tests of gastric study in two hours, and gives connected pictures of the secretion during this period. The procedure is simple and can be carried out by any practitioner with the aid of his nurse. The gastric curves are placed in five groups, no stress being laid on the actual acid figures, but emphasis is placed upon the position of the apex and the two hour level of the curve, the difference between the free and total acid curves and the behavior of the free hydrochloric acid curve. By repeating an examination a more stable, reliable curve is obtained. By carefully following out this procedure it is possible to become more intimately acquainted with the detail of gastric activity, thus making it possible to carry out treatment by diet and medication in a more intelligent manner, as well as making diagnoses of gastric complaints more accurate.

Alkaline Reserve Capacity of Whole Blood and Carbohydrate Mobilization as Affected by Hemorrhage.—Arthur L. Tatum (*Journal of Biological Chemistry*, January, 1920) found that rabbits subjected to hemorrhage showed a rise in blood sugar and a simultaneous fall in alkaline reserve capacity of the whole blood. Alkalies given by mouth retarded the onset of hyperglycemia, while acids fed by mouth increased the susceptibility to hyperglycemia. The author believes that his data support the views of Murlin and Underhill and their coworkers that the acid base balance in the blood, and ultimately in the body cells, is an important factor in determining sugar changes in the blood.

Malaria Control in Rural Communities by Antimosquito Measures.—H. H. Howard (*Southern Medical Journal*, April, 1920) advocates the stocking of waters in mosquito breeding places with top minnows, which feed on the larvæ of mosquitos. In the rural district under his management he says that approximately ninety per cent. of the potential mosquito breeding places which could not be drained are thus controlled. The advantages of fish control over oiling are that it is less expensive, less subject to accident through wind, rain and wave action, and more permanent in its results. The various measures undertaken, of which this was one, resulted in reducing the percentage of clinical malaria in the district from 16.5 in 1918 to 3.7 in 1919.

Clinicomicroscopical Observations on Filariasis.—A. Martinez Alvarez (*New Orleans Medical and Surgical Journal*, June, 1920) says that during the acute attack there exists a polymorphonucleocytosis arriving at times at thirty thousand. After the attack is over there is, in some cases, a periodical nocturnal eosinolymphocytosis. The changes of the moon between the fourth quarter and the new moon mark in many cases a monthly eosinolymphocytosis when the attack is not present, and always when there are microfilariæ in the peripheral blood; but if there is an explosion of the acute attack, then a polymorphonucleocytosis is present. The count of erythrocytes and of the hemoglobin both descend below the normal figure and are maintained there.

Remote Manifestations of Focal Dental Infections.—Ricardo Fernandez (*Philippine Journal of Science*, January, 1920) states that clinical examination, aided by the x ray, makes diagnosis certain in cases of dental infection, and at the same time the extent of the lesion present may be determined. He reports ten cases of rheumatic disturbances or neuralgia, in some of which polyvalent or autogenous vaccines were used, with prompt benefit. In the cases in which cultures were made, streptococcus viridans associated with staphylococci was obtained in one instance. In the others, only streptococcus viridans was found. Vaccine containing 100 million organisms per mil was prepared from the bacteria obtained from each patient. Patients treated by cure of the affected teeth or by simple extraction showed gradual recovery, while those who received vaccine therapy in addition recovered more rapidly. An aseptic procedure in obtaining the purulent material for vaccine preparation seems to be important if good results are to be procured.

Dust and Manure in the Etiology of Diphtheria.—Micheleau (*Journal de médecine de Bordeaux*, March 25, 1920) writes concerning a small epidemic of diphtheria which developed in a cantonment and was initiated among some young soldiers who had had no contact with any diphtheria patient but were quartered in a stable. Stress is laid on the importance of manure and dust in the transmission of diphtheria. Poultry is also a source of danger. Stables, cowsheds, barns and other structures frequented by fowls and domestic animals are not devoid of danger as temporary quarters for the military.

Errors in the Diagnosis of the Contagious Diseases.—Arthur I. Blau (*Medical Record*, August 28, 1920) reports the following factors in erroneous diagnosis: 1, Carelessness in arriving at a diagnosis; 2, not holding a case under observation when in doubt; 3, not utilizing laboratory tests at one's disposal; 4, deficient knowledge and experience in the contagious diseases, both theoretical and practical; 5, anxiety of the patient's kin for an immediate diagnosis. A detailed and careful history should be obtained, both past and present, especially dwelling on the contagious diseases; information should be sought as to a possible exposure to contagion. The examination should be carefully conducted with the patient stripped, particular attention being given to the condition of the skin and throat. Differential diagnostic points should be carefully considered, and it is wise to take cultures in all cases of sore throat in children. If, in spite of all these precautions, no definite diagnosis can be arrived at, the patient should be held under observation until the development of additional signs and symptoms.

Active Immunization Against Diphtheria.—J. Buren Sidbury (*Southern Medical Journal*, July, 1920) states that the Schick test is reliable for determining whether the individual has an immunity against diphtheria or not. It will differentiate between a true case of diphtheria and a carrier, and is an accurate clinical check on the efficiency of diphtheria antitoxin administration. Should an outbreak of diphtheria occur among children previously tested, it would be necessary to immunize with antitoxin only the susceptible children. This applies to families as well as to schools. These precautions having been taken, should an outbreak of diphtheria occur in a school, class work could continue without interruption; those who show a negative Schick do not need an immunizing dose, for they are not likely to contract diphtheria if exposed. The age incidence of diphtheria as shown by the Schick test is between one and five years, which is the age period of greatest mortality to diphtheria infection. Between seventy-five and eighty per cent. of the total mortality from diphtheria occurs during this period. Universal application of the Schick test to all children up to fifteen years, and the administration of toxin antitoxin to the nonimmunes, and to all children under two years, would practically eliminate diphtheria. The results of his retests show that the administration of toxin antitoxin reduces the nonimmunes from one hundred per cent. positives to twenty or thirty per cent. positives at the end of one year.

Bilharzia Treatment.—F. G. Cawston (*Lancet,* August 21, 1920) finds that cures are effected in a majority of cases by treatment with fungus free tartar emetic solutions injected in small amounts (not over one and a half grains) until a total of twelve to fifteen grains is reached. The first three treatments are on succeeding days, the rest on alternate days.

Manganese in Suppuration.—E. Watson-Williams (*Practitioner,* May, 1920) states that manganese powerfully increases the resistance of the tissues to local infections, including those of the accessory sinuses, and is therefore a valuable adjunct to the surgical treatment of suppuration. It further improves the anemia which commonly is associated with such conditions.

Urticaria after Specific Fevers.—E. Ward (*British Medical Journal,* August 21, 1920) finds that urticaria develops after many febrile affections. He believes it likely that it is due to postfebrile activity of the mechanism of immunity. Joint pains and pyrexia occurring at the same time the author attributes to probable anaphylaxis, due to pathological byproducts.

A Case of Purpura During Serum Disease.—Henry Edmund Meleney (*American Journal of the Medical Sciences,* April, 1920) reports a case in which purpura occurred during the course of serum disease following the administration of antipneumococcus horse serum. The elements of blood coagulation were normal, so it is probable that the purpura was due to the presence of a toxin associated with the attempt of the body to eliminate the foreign protein.

Pathogenesis of Chronic Morphinism.—Erwin Straus (*Monatschrift für Neurologie and Psychiatrie,* February, 1920) says that a study of cases at the Berlin Drug Clinic showed that the tendency to seek an escape from reality in some form or other was predisposing for the morphine addict. The method of treatment used at the clinic was that of cutting off the drug completely, which was considered more efficacious and lasting than diminishing the supply gradually.

Skin Involvement in Breast Cancer.—Alson R. Kilgore (*Journal of Cancer Research,* July, 1920) describes the histological pictures seen when skin epithelium has been "exposed" to approaching mammary carcinoma. He states that in the cases studied no pictures of transformation of normal into malignant cells were seen, but seven cases of secondary histological union apparently occurred, which, but for the distinctive morphological appearance of the cancer and the skin, epithelial cells might be mistaken for transformation.

Cancer Mortality in Basle, 1870 to 1919.—Jessen (*Schweizerische medizinische Wochenschrift,* November 18, 1920) states that the cancer death rate in Basle has increased from 0.86 to 1.31 to the thousand of population, and that the proportion of deaths from cancer to the total mortality has increased from 2.69 to 10.90 per cent. Cancer of the stomach seems to be the predominating form in Basle, as he says that it is five times as numerous as all other forms of cancer.

The Antiscorbutic Value of Honey.—Harold K. Faber (*Journal of Biological Chemistry,* August, 1920) fed a series of ten guineapigs on a diet of oats, water, and honey. In nine of the animals severe scurvy developed in four to six weeks, so it is probable that no antiscorbutic vitamine exists in honey.

Traumatic Aneurysm of the Leg.—J. A. C. MacEwen (*Lancet,* November 6, 1920), in a report of two cases of aneurysm of the leg, states that a traumatic aneurysm pulsates, contrary to accepted opinion; nor has a circumscribed aneurysm the same character as a sacculated aneurysm. Misconceptions of this sort lead to incorrect diagnoses, such as rheumatism and sarcoma.

Spermatocele.—Edward T. Crossan (*Annals of Surgery,* October, 1920) states that spermatocele is a retention cyst of the scrotum which is or has been in communication with the semen carrying system. The cysts arise most frequently from the vasa efferentia, the vasa aberrantia superiori, and the sessile hydatids. The main symptom is swelling, with sometimes a history of previous trauma.

Life History of Ascaris Lumbroicoides.—F. H. Stewart (*British Medical Journal,* November 27, 1920) fed the eggs of Ascaris suilla, which is identical with the round worm of man, to sucking pigs. Larvæ from the eggs passed through the lungs, causing ascaris pneumonia. The small intestine was catharral because of the presence of larvæ. From previous experience, the author concludes that the worm can attain full development only in the pig or in man.

Ascending Compression Myelitis, Associated with Unusual Pathology.—Harold I. Gosline and Francis E. Weatherby (*Journal of Nervous and Mental Disease,* March, 1920) consider this case remarkable, in that a man who appeared to be in good health should develop a compression myelitis which resulted in his death after a seemingly slight fall. The unusual pathology of fibrinopurulent pleurisy with extension extradurally into the vertebral canal is of note.

Possibilities of Carrel-Dakin Technic in Civil Life.—Allen G. Rice (*Boston Medical and Surgical Journal,* February 12, 1920), speaking of the difficulty of introducing this procedure into a civil hospital, in which a faulty technic has brought about its condemnation, says that unless a real Dakin's solution can be obtained from a man who can be trusted absolutely to make it always of the proper strength and alkalinity, no attempt should be made to practise the Carrel-Dakin technic. There is no short cut to success.

Rapid and Successful Treatment of Impetigo of the Face.—D. Sicilia (*Revista de Medicina y Cirugia Practicas,* September 21, 1920) has had remarkable results from washing the impetiginous lesions with a strong solution of permanganate of potash (from one to five per cent.) followed by the application of a solution containing methylene blue, phenol, sulphate of copper, sulphur, yellow oxide of mercury and oxide of zinc. The permanganate seems to have been the more important of the two agents in the treatment.

Proceedings of National and Local Societies

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting held at the Academy of Medicine, October 5, 1920.

The President, Dr. Walter Timme, in the Chair.

Encephalitis Lethargica.—Dr. Isadore Abrahamson presented an unusual case of encephalitis lethargica for the purpose of showing how an intensive study of this disease had shed light upon many obscure points in the pathology of diseases of the nervous system. New names were frequently attached to unusual variations of one disease, and discoveries of distinct disease entities heralded without cause. The patient illustrating the complexity of encephalitis manifestations was an Italian, a butcher by trade. His previous personal history was negative. The initial symptoms were pain in mastoid, then in the left occiput, and into the left shoulder. There was fever for three days, then a lethargic sleep for two weeks, from which he was easily aroused, answering in a typical fashion. Then movements set in, first in the left shoulder, then in the left index finger. The right hand was soon affected and the speech became markedly involved. It was dysarthric, not aphasic. There was no fine tremor. The legs were involved later. Pains and paresthesia had persisted from the time of the onset nine months ago in the suprascapular region and the nape of the neck. The patient complained of formication about the left shoulder. A neurological examination showed the right pupil ovoid up and down, very sluggish to light; accommodation normal. The left pupil was ovoid from side to side, accommodation not so good, very sluggish to light.

The most marked feature exhibited by this patient was the nature of the movements of the upper extremities, the left especially. The movements were slower than those of chorea, resembling intentional movements. There was no fibrillation, no myoclonia. Every movement of a muscle was followed by movement of a part, both antagonistic and synergic. There was thus presented in this patient, as a late sign of an undoubted lethargic encephalitis, a disturbance of motility, without ataxia, without loss of power, without atrophy, or dysmetria, showing no dyssynergia, nor myoclonia. There were evidences of sensory irritation still persisting. The movements were neither choreic nor paramyoclonic, nor did they resemble those of dyssynergia cerebellaris. They were not hysterical, nor the movements of dystonia. There was no torsion spasm of the pelvis or neck. They are extrapyramidal, not induced by pain or paresthesia. It was impossible to designate the affliction by any accurate term belonging in the recognized categories. The accepted classification of the disease according to manifestations was here clearly seen to be untenable.

Dr. Thomas K. Davis presented a patient in whom encephalitis lethargica had been complicated by pregnancy. The encephalitis began three weeks before the birth of a child in February, 1920, and took the pseudoparkinsonian form. The arms assumed a constant tonic contracture across the chest, the elbows strongly flexed, being passively extended only with great difficulty. Her arms in full extension were placed in plaster casts, worn for three weeks, which resulted in their becoming rigid at full extension. It had been quite impossible to flex either elbow since. There was usually a fine tremor of the hands; no pyramidal tract signs. An x ray of the right arm showed a faint suggestion of new bone formation at the elbow, possibly beginning ankylosis. In the left arm, bony changes were absent and the high degree of muscular tone apparently alone produced the rigidity of this arm.

Pyramidal Sclerosis Following Electric Burns.—Dr. Foster Kennedy showed a patient in whom an almost pure pyramidal tract change had taken place. The patient had been working in front of a dead cable when a charge of 1100 volts was sent through it. He remembered nothing of the accident, and was unconscious for eleven hours after it. This accident occurred six years ago. He was paralyzed immediately thereafter, and had suffered from spastic legs and double ankle clonus since. There was control of the bladder, but incomplete control of the rectum. A large scar was visible on the left scapula, showing point of ingress of the charge, and a smaller one was found on the left buttock at the point of exit. There were no neurological signs of interest except the spastic paraplegia. The burn was a third degree burn. Within two years of the injury the patient began to have a double cataract. The lens in the right eye had been removed. Dr. Kennedy said that his information in regard to results of this type of injury to the nervous system was slight, and asked for any points of interest from the audience.

Clinical Syphilis of the Central Nervous System.—Dr. Junius W. Stephenson, in a plea for the more fundamental instruction of medical students in the practical aspects of syphilology, gave a brief classification along lines suitable for complete and rapid instruction. Dr. Stephenson pointed out that lues rarely attacked the nervous system *en masse,* but produced symptoms referable to a patch of meninges here and there, a blood vessel of small calibre, or a tract in the spinal cord. The accuracy of diagnosis depended largely upon the individual's knowledge of the anatomy and physiology of the nervous system. The successful treatment of syphilis accordingly depended upon proper discrimination as to what anatomical physiological destruction was caused by the initial invasion, the condition of certain structures being unalterable, while others would be amenable to treatment. Thus the importance of the early recognition of syphilis was to be emphasized. When the average patient reached the neurologist, the damage was usually too extensive for much improvement. The ability to recognize the disease in the early stages was therefore of the utmost importance. The one criterion of syphilis was the Argyll-Robertson pupil, but this was not a preliminary sign. Any irregularity of the pupil in patients below the age of forty should be considered luetic until proved otherwise. A further sign of diagnostic value was one that Dr. Stephenson had styled the "dead man's pupil." Experience was necessary to recognize this sign.

The symptoms of syphilis within the cranium, those of meningitis, isolated gumma, cerebral vascular syphilis, thrombosis of the posterior inferior cerebellar artery, general paresis, meningeal and parenchymatous, syphilis of the optic nerve, were briefly outlined, following which Dr. Stephenson surveyed the branch of syphilis involving the spinal cord, touching upon the principal diagnostic points and certain special tests and signs that he had found of value. The entire field of syphilitic disease was rapidly summarized and the earmarks of the various types set forth for rapid and easy assimilation.

Stuttering.—Miss Hannah M. Creasey said it was her impression that speech specialists should endeavor to gain the cooperation of neurologists if the profession of speech correction was to assume the dignity and gain the respect that it deserved. In her work, she said, she had found that there was no royal road to recovery. Her object in presenting her methods was to show the philosophy underlying them.

Stuttering, including stammering, she defined as the inability to speak at will. It was a mental condition, a psychic neurosis, which freed itself in somatic symptoms, such as cramps and excessive tension of the organs of speech. There was lack of harmonious working between the brain and the speech organs. The speech mechanism was not at fault; it was the mind that was tied, not the tongue. Stuttering must accordingly be traced further back than the symptoms, or even the trauma producing the symptoms.

Every experience which produced a painful effect of fear, anxiety or shame, might act as a psychic trauma and produce pathological results if it fell on fertile soil. Charcot said that in order to create nervousness two factors were necessary: one permanent, the neuropathic predisposition; the other contingent, the provoking agent. A shock might have brought out the symptoms, revealing the permanent neurotic background. After the effects of the shock had been removed and the symptoms cured, another shock might again reveal the constitutional weakness and the cure be undone. This had occurred in many shell shock cases in the war.

The dominant quality in the syndrome of stuttering was fear, and the nature of the fear was fear of people, of speaking before people. On entering school the stutterer carried his fear over from his home environment to anyone in authority, anyone he thought might be hostile and unsympathetic. Even in the best environment, intelligent sympathy might be lacking. The fear attached to stuttering was a morbid fear. It did not arise from the shock, but from an internal condition. The history of fright, shock, accidents, and other attributed causes of stuttering showed that they might have resulted in a temporary normal fear. The patient's makeup had predetermined the morbidity of the fear. According to Frink, the manifestation of an anxiety hysteria was a morbid fear and the physical accompaniment thereof. Stuttering might be considered a manifestation of anxiety hysteria.

Accepting the premise that stuttering was a fear neurosis (anxiety hysteria), Miss Creasey's treatment followed along the lines laid down for other psychoneuroses. The work was largely a matter of character building, a reorganization of the emotional life. To counteract the attributes of fear, cowardice, and stubbornness, environmental trends were reorganized to bring about a more normal reaction to life, to produce fearlessness, selfcontrol, and moral courage. An example of this method given was that of a student who, when asked why he stuttered more than usual at one time, replied that he had been worsted in a fight. His tendency to expect defeat was pointed out to him, and he was told to approach his next fight with his mind made up to win, and to stay at the job until he did so.

Miss Creasey said that the personal equation of the doctor in this branch of therapy, as in all others, was of great importance. Understanding the individual and letting him know that the doctor understood his peculiar difficulties, would go far toward altering his attitude toward others.

The stutterer's bodily health and environment should have careful attention. Segregation of stutterers was not desirable. The symptoms might be removed under institutional care, but the problems in the unfamiliar outside world would cause them to return. Children should be kept in school and in touch with normal life in every possible way. To attain fearlessness the patient was given a new method of speech. The sufferer was stuck by an inability to get over the initial consonant sound to the vowel. The psychic fear caused an overinnervation in the occlusive, consonantal sounds, and the inability to coordinate to the consonant with the vowel in the syllable. The patient was shown that normal speech differed from his in the weaker consonantal obstruction. The work proceeded with the syllable, coordinating the consonants and the vowels. Vowel valuation was made the keynote of the work. The patient was trained to consider the vowels as life savers. The mental attitude of fearlessness and selfconfidence inculcated by care in the treatment, together with the scientific aids to phonation when made clear and reasonable to the stutterer, enabled the work to proceed surely and with lasting success.

Dr. Jelliffe agreed with Miss Creasey's final summary of the extreme complexity of the situation. He said that he did not believe even the majority of cases could be placed in the anxiety hysteria group. The reasons for the type of result obtained lay in the nature of the beginning of the neurosis. The compulsive type, beginning in the autoerotic period, was treated with extreme difficulty. Such patients were prone to relapse, and required much time. Miss Creasey's effort in establishing a transference was sane and advisable. The most promising part of her presentation, Dr. Jelliffe felt, was the beginning of cooperation between the layman and the neurologist. Neurology needed more help from intelligent laymen. There are not enough neurologically trained physicians to handle psychoneurotic problems in the community. If intelligent cooperation could be established between the neurologist and the sincere helper, much help can be obtained.

New York Medical Journal
INCORPORATING THE
Philadelphia Medical Journal and the Medical News
A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 9. NEW YORK, WEDNESDAY, MARCH 2, 1921. WHOLE No. 2204.

The Classical Endocrine Syndromes*

By LEWELLYS F. BARKER, M.D.,
Baltimore.

INTRODUCTION.

Interest in disorders of the ductless glands has become widespread, not only among physicians but among the laity. The volume of literature upon the subject during recent years is very large, though fortunately it is now being summarized for us by a journal especially devoted to the purpose, namely *Endocrinology*, published by the Association for the Study of the Internal Secretions. In addition to the reports of clinical observations on patients believed to be suffering from endocrine disturbances, the literature contains many articles upon pathological histological, experimental physiological, pharmacological and chemical investigations bearing upon the ductless glands.

Endocrine therapy has become very popular, perhaps too popular. Many glandular products have been placed at the disposal of physicians for therapeutic purposes; some of these are exceedingly valuable, others of them are of doubtful value, and many of them are entirely worthless. The laity, it is to be feared, have an exaggerated idea of the extent to which knowledge has progressed in endocrine domains, and are prone to cherish hopes that as yet can meet only with disappointment. Such false hopes have doubtless been aroused, however, by the extraordinarily beneficent effect of endocrine therapy in certain selected cases. It is important that the medical profession (and as far as possible the laity also) should be kept conversant with the actual state of knowledge concerning the ductless glands and their disorders, so that this knowledge can be made use of when applicable, and so that not more than is legitimate in the present state of science will be expected.

Nature is prodigal in the multitude of forms of disorders of the ductless glands that she presents for clinical observation. No two cases of endocrine disorders are clinically precisely alike. Analysis of the clinical manifestations referable to diseases of the endocrine glands, patiently made over long periods, have permitted, however, the establishment of certain more characteristic forms, or clinical types, that can be used as paradigms that greatly facilitate clinical study and classification. It is not surprising that in this relatively new endocrine field practitioners should have some difficulty in satisfactorily orienting themselves. The difficulties of such orientation are all the greater because of the tendency for a disorder of one gland to be associated with some disorder of one or more of the other ductless glands. These endocrine, or hormonopoietic, glands constitute, in reality, a chain of organs among which close interrelations exist. Although in many instances in which endocrine symptoms and signs are manifest the syndrome presenting may permit us to localize the primary and predominant pathological process in one of these glands, there are other syndromes in which two or three of the glands would seem to be almost equally involved, and a few in which all the glands of internal secretion are simultaneously disturbed in function. It must be obvious that in such multiglandular syndromes the clinical analysis is a far more difficult matter than in the syndromes of predominantly uniglandular origin. A thorough acquaintance with the latter will greatly facilitate analysis when the clinician is confronted with a patient who suffers from the former variety of disorder. The more complex riddles propounded by nature in these endocrine domains are more likely to find adequate solution if we are content with solving one after another the simpler problems of which the more complex ones are composed.

In the brief compass of this address I shall confine myself to a summary description of the better established clinical types of endocrine disease of supposedly predominantly uniglandular origin. With this in view I have chosen as the title of my paper the Classical Endocrine Syndromes. These well established types with their characteristic marks are now familiar to all internists of experience and to many general practitioners. That a knowledge of them may become more widespread among the latter group is the object of the present summary. I shall, therefore, try to describe briefly and clearly some of the principal clinical syndromes referable to disturbances of the endocrine function of the thyroid, the parathyroid glands, the thymus, the hypophysis, the epiphysis, the suprarenals, the pancreas, and the

---

*Address delivered by invitation before the Medical Section of the College of Physicians, Philadelphia, November, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

gonads. Although the time limit of the address forces me to omit many interesting details, I have the hope that a view of the bare bones of the subject may serve a useful purpose.

THE THYROID SYNDROMES.

A large volume could be written upon the thyroid diseases alone. For the moment, let us concentrate our attention upon functional deviations in two main directions: 1, overactivity of the thyroid gland (hyperthyroidism), and the associated clinical syndrome known as Graves's disease, and, 2, underfunction of the thyroid gland (hypothyroidism), and the associated clinical syndrome known as myxedema.

Graves's disease.—Known also as Basedow's disease, Parry's disease and Flajani's disease, Graves's disease is perhaps the best known type of endocrine disorder. The four commonest signs in this syndrome, often spoken of as the cardinal symptoms, are: 1, persistent tachycardia; 2, struma; 3, marked fine tremor, and, 4, protrusion of the eyeballs, or exophthalmos.

The syndrome is most pronounced in what is known as typical exophthalmic goitre, in which there is diffuse hyperplasia of the whole thyroid gland, giving rise to a horseshoeshaped, pulsating struma, associated with a high degree of tachycardia (pulse rate 100 to 150 or more a minute), marked nervous symptoms, including fine tremor, and obvious protrusion of the eyeballs. A similar, though often less pronounced, syndrome, is met with in socalled toxic goitre, in thyroid adenomata, in acute thyroiditis, and in certain other conditions in which the activity of the thyroid is believed to be increased.

In all these forms of hyperthyroidism it would appear that some poison is produced that exerts a toxic effect upon the cardiovascular system, upon the nervous system (especially its autonomic parts), and upon the tissues concerned in metabolism. Many believe that the poison concerned is the socalled thyroxin, isolated by Kendall of the Mayo Clinic; others believe that the thyroid may produce several poisons of which thyroxin is one of the most important.

Disturbances of autonomic innervation in Graves's disease appear to be responsible for the symptoms referable to the eyes, to the heart and bloodvessels, to the skin, to the digestive system, to the respiratory system, and to the urogenital system. The autonomic nervous system, it will be recalled, consists of two parts—the sympathetic system, and the craniosacral or socalled vagal autonomic system. Both of these systems appear to be disurbed in Graves's disease, although in some cases sympathicotonic symptoms predominate, in others vagotonic symptoms are uppermost. In most patients the symptoms indicate involvement of both sympathetic and craniosacral systems (mixed cases).

In addition to protrusion of the eyeballs, or exophthalmos, the more important eye signs are: 1, widening of the lid slits, or Dalrymple's sign; 2, dissociation of the movements of the eyeball and of those of the upper lid, or Von Graefe's sign, and, 3, inability to maintain convergence of the eyes, or Moebius's sign. At least a dozen minor eye signs may occur in addition, but to these I shall not refer.

Tachycardia is the most important cardiovascular symptom of Graves's disease. Other symptoms in this domain include subjective feelings of palpitation, often independent of the pulse rate, and temporary erythemas, especially of the neck and upper thorax when the patient is excited. Of all the signs of Graves's disease, persistent tachycardia is the most constant. When a patient, at rest, exhibits a pulse rate that remains persistently above 90, in the absence of obvious cause within the heart itself, of tuberculosis, or of any acute infectious process, the suspicion of a developing hyperthyroidism should be aroused, even in the absence of other symptoms of Graves's disease.

Prolonged thyrointoxication leads to degenerative change in the heart muscle, to dilatation of the heart, and sometimes to atrial (auricular) fibrillation with its characteristic sign, a perpetually irregular pulse.

Of the cutaneous symptoms of Graves's disease, profuse sweating, otherwise unexplained, especially sweating of the palms of the hands and of the soles of the feet, and a thin, delicate, soft texture to the skin, are perhaps the most important.

Of the symptoms referable to the digestive apparatus, unmotived attacks of watery, painless diarrhea, in which from four to ten or thirty stools a day are met with, and persistent nausea or vomiting without apparent cause, are not uncommon.

In the respiratory system, subjective feelings of dyspnea, accelerated respiration, and shallow breathing, are symptoms that, when present, are suggestive of hyperthyroidism.

The socalled Goetsch test is now much used for the detection of oversensitiveness of the sympathetic nervous system, so common in Graves's disease. A small quantity of epinephrin solution is injected subcutaneously, and its effect upon the pulse rate, the tremor, the blood pressure, and the subjective nervous symptoms, is closely watched. When applied with observance of the several precautions urged by its author, this test is, in my opinion, of real value for diagnostic purposes.

Acceleration of the metabolic processes is one of the most important of the clinical phenomena that we meet in Graves's disease. Many of the patients, though they eat large amounts of food, steadily emaciate, for the fires of the body burn high in hyperthyroidism. An exact measure of the acceleration of metabolism in Graves's disease is best obtained by determination of the basal metabolic rate. For this purpose several excellent clinical procedures are now available. In outspoken cases of Graves's disease the total combustion in the fasting, resting state may be from fifty to seventy per cent. greater than normal. All degrees of accelerated metabolism may, however, be met with in Graves's disease, from such outspoken accelerations down to a normal basal metabolic rate. There are remarkable variations in the degree of acceleration of metabolism in the same patient at different times. Whether or not these variations account for the discrepancies that exist between positive Goetsch tests and positive metabolic rate tests remains still to be determined.

The psychic state of Basedowian patients is very characteristic, and is now well known to experienced clinicians. The patients exhibit a peculiar restlessness, an overalertness and quickness of movement, marked apprehensiveness, anxiety, and insomnia. Phobias and obsessions are common among these patients. Occasionally, outspoken psychoses occur.

Some hyperthyroid patients exhibit profound muscular weakness (myasthenia). They may complain of giving way of the legs on walking, or they may find it difficult quickly to step upon a chair in the consulting room.

The blood picture is sometimes helpful for differential diagnosis, for many of the patients suffering from Graves's disease show an outspoken lymphocytosis with corresponding diminution of the polymorphonuclear neutrophiles. This blood picture may depend upon the fact that many of the Basedowian patients are also thymus carriers.

In a typical case with all the cardinal symptoms present, the diagnosis of Graves's disease will scarcely be overlooked by anyone. But there are many atypical cases and *formes frustes* that tax the diagnostic ability of the most experienced. Undoubtedly, many cases of mild hyperthyroidism are overlooked for a long time by general practitioners. A persistent tachycardia, a rapid emaciation otherwise unexplained, unmotived watery diarrhea, excessive sweating, marked fine tremor, outspoken lymphocytosis, one or more of the several eye signs, overalertness or overquickness of movement occurring in a patient, should make the practitioner at least think of the possibility of an existing hyperthyroidism. In the recognition of the less typical cases, the Goetsch test and the determination of the basal metabolic rate will often be found helpful.

As to the treatment of Graves's disease, there is still much divergence of opinion. Some urge partial thyroidectomy in every case; others maintain that just as good or better results are always obtainable by medical therapy. Without entering into details, I shall give you briefly my own impression. Many patients certainly do well under medical therapy (mental and physical rest; general upbuilding; removal of foci of infection; ice bag over the thyroid and over the heart; retardation of metabolism by administration of arsenic or of quinine; lessening of the sensitiveness of the sympathetic system by ergot or its products; radiotherapy; psychotherapy). It would, therefore, seem worth while to give nonsurgical therapy a fair trial in every case. But when the response to medical measures is unsatisfactory, the physician should not, in my opinion, wait too long before resorting to surgical therapy. It is unfair to the patient and to the surgeon to allow the heart, the gonads and the nervous system to suffer for too long a period from pronounced thyrointoxication. Great relief can often be speedily obtained by ligature of thyroid arteries or by resection of the thyroid gland in diffuse hyperplastic goitre, or by removal of adenomata when they are present in the gland. The results of surgical therapy for thyroid adenoma are particularly gratifying. One of the most striking things that a physician has opportunity to observe is the obvious relief that patients with outspoken hyperthyroidism experience within a few days after partial thyroidectomy. It must be remembered, however, that even after surgical operation upon the thyroid gland, patients who have had Graves's disease with diffuse hyperplastic goitre, rarely regain perfect health. They require close medical supervision for a long time, often for the whole of life, and it is only occasionally, in my experience, that they become absolutely strong and well and without recurrence of one or another symptom. On the whole, however, the results of both medical and surgical therapy in Graves's disease are very satisfactory. In most cases it is possible, especially if treatment is inaugurated early, to restore these patients to a fair degree of health, with ability to lead a nearly normal life.

Myxedema.—Loss of function or insufficient function of the thyroid gland (athyroidism and hypothyroidism) are accompanied by peculiar symptoms, which include, 1, leatherlike thickening of the skin; 2, falling out of the hair; 3, mental dullness and torpor; 4, sensitiveness to cold; 5, obesity; 6, constipation; 7, marked slowing of the metabolic processes, and, 8, in the more pronounced cases, mucuslike edema of the skin.

The type now known as the idiopathic form of myxedema was first described by Sir William Gull in 1873 as a cretinoid state supervening in adult life in women. To this disorder the term myxedema was applied two years later by William Ord, who noted a small thyroid gland in one of his cases at autopsy, although emphasis upon the small thyroid in this disease was first laid by Hadden in 1882.

A great step forward in the understanding of myxedema was made in 1883 when Kocher first called attention to the cachexia strumipriva that follows operations for goitre in which the whole thyroid gland is removed. Reverdin's report on postoperative myxedema, made in the same year, also confirmed the conviction that operative athyroidism results in myxedema.

From the studies of the Myxedema Commission of the Clinical Society of London, reported in 1888, it was made clear that the functions of the thyroid gland are necessary to normal growth and for the normal function of certain organs. This commission also recognized the identity of Gull's disease, sporadic cretinism, and cachexia strumipriva, in so far as the loss of thyroid function is concerned.

Later on, Murray, Hector Mackenzie, and others demonstrated the possibility of preventing postoperative myxedema by the administration of thyroid extract subcutaneously or by mouth. This demonstration was soon followed by recognition of the advantages of substitution therapy in Gull's disease, and in socalled sporadic cretinism or congenital myxedema. Still later, Kocher further enriched our knowledge by calling attention to certain atypical and latent forms of hypothyrosis (myxedeme fruste; thyropenia.)

The symptoms and signs in outspoken myxedematous states are very characteristic. The skin is thick, dry, and rough, and it is often thrown up into folds. Usually the skin is of a pale color and has a waxy look. Though the face may look edematous, it does not pit on pressure. Characteristic sacs appear below the eyes, which may at first suggest nephritic edema, but the small wrinkles in the skin are not obliterated as they are in true edema. The patients usually have a double chin and have pads of fat above the clavicles. The hands are short and plump. The contours of the ankles are often obscured, owing to myxedematous swellings. The hair tends to fall out, and the individual hairs are short, dry, brittle, and rather coarse. The speech is slowed, and the voice monotonous. The patients complain of forgetfulness, of inability to think, and of slowing of thought. Their movements are slow and clumsy. The face looks stupid and sleepy. There is often exophthalmos, with narrow lid slits. The patients easily gain in weight on a scanty diet, and the basal metabolic rate may be from fifty to sixty per cent. or more below normal. The vasomotor reactions are sluggish. The temperature is often subnormal. Intractable constipation is a common symptom. This clinical picture when present in complete form should not easily be forgotten by any physician who has once observed it.

Gull's disease, or idiopathic myxedema of adults, is most common in women in the third decade of life, the onset being as a rule insidious over a period of years, although sometimes the fullfledged syndrome may develop within a few weeks. Neuralgic pains and pains in the muscles may be the first symptom, and thickening of the skin of the face appears early.

In postoperative myxedema or cachexia thyropriva, the development of the symptoms is rapid after the operation. The patients show mental torpor, complain of tiring easily and of marked sensitiveness to cold. One formerly active and alert is soon changed into a dull, stupid looking person, whose speech and thought are slowed. Swelling of the skin soon appears and is more noticeable in the morning than later in the day. The hair begins to fall out, and the patient assumes a pale, cachectic appearance. This postoperative myxedema has, fortunately, become rare since surgeons have learned the necessity of leaving behind a sufficient amount of thyroid substance when performing strumectomy.

In congenital myxedema, due to thyroaplasia, formerly known as sporadic cretinism, the symptoms appear within a few months after birth. The sleepiness, the obesity, the coarsely wrinkled, thickened skin, the exophthalmos, the enlarged tongue, the open, drooling mouth, the cyanotic lips, the scanty, lustreless hair, the plump hands with short fingers, the pot belly, the umbilical hernia, the retardation of growth, the constipation, the anemia, and the mental retardation of the thyroaplasic child, are characteristic. In later childhood, the persistent dwarfism and the failure of the ossification centres to develop at the proper time as shown on x ray examination, are distinguishing marks.

In thyropenia, or the *forme fruste* of myxedema, the existence of the hypothyroidism is often overlooked by the practitioner. It should, however, be suspected in children or adults who are habitually constipated without other discoverable cause. It should be thought of also in children who are abnormally dull at school, and in those whose growth is retarded. An abnormal tendency to obesity, especially if the cheeks are red, should also excite the suspicion of the existence of thyropenia. A high degree of sensitiveness to cold in a plump person is another symptom that should make the practitioner think of the possibility of thyropenia. In all such cases, the basal metabolic rate should be determined and the effects of administration of small doses of thyroid extract should be observed.

In the following table, which we owe to Kocher, the symptoms in myxedema and in Graves's disease are compared. I remember giving a talk one time before an audience of university men, illustrating the talk by lantern slides, including a slide presenting this table. A professor of history came to me afterward and stated that if the table were correct he must be suffering from insufficiency of the thyroid gland. From this table he had made his own diagnosis, which, later, was proved to be correct.

MYXEDEMA.	GRAVES'S DISEASE.
1. Absence or atrophy of thyroid gland.	1. Enlargement of thyroid, usually diffuse; increased vascularity.
2. Slow, small, regular pulse.	2. Frequent accelerated pulse, often irregular.
3. Vasomotors sluggish.	3. Very excitable vasomotors.
4. Apathetic, quiet look; expressionless.	4. Anxious look; on fixation of eyes, suggestion of anger in facial appearance.
5. Narrow lid slits.	5. Wide slits; protrusio bulborum.
6. Slow digestion and excretion; anorexia.	6. Abundant excretions; appetite usually abnormally great.
7. Slowed metabolism.	7. Accelerated metabolism.
8. Thick, nontransparent, wrinkled, dry, and desquamating skin.	8. Thin, transparent vascular, moist skin.
9. Short, thick fingers, often broad at the ends.	9. Long, slender fingers with tapering terminal phalanges.
10. Drowsiness and sound sleep.	10. Insomnia and restless sleep.
11. Dulled sensation, apperception and action.	11. Hypersensitiveness, lively apperception and action.
12. Poverty of thought; apathy; lack of feeling.	12. Flight of ideas; mental excitations; sometimes hallucinations, mania or melancholia.
13. Clumsiness.	13. Restless haste.
14. Stiffness of the extremities.	14. Tremor of the extremities; increased mobility of joints.
15. Retardation of bony growth; bones short, thick, or deformed.	15. Delicate bony structure; now and then soft, thin bones.
16. Constant feeling of cold.	16. Unbearable feelings of heat.
17. Slow, deep breathing.	17. Superficial breathing with faulty inspiratory expansion of thorax; tachypnea.
18. Increase of body weight; obesity.	18. Loss of weight; emaciation.
19. Senile appearance, even in young.	19. Youthful appearance, especially at the beginning.

THE PARATHYROID SYNDROMES.

Removal of or severe injury to the parathyroid glands, with consequent parathyroid insufficiency (hypoparathyroidism), is followed by a characteristic clinical syndrome, known as tetany. Whether or not there are clinical syndromes due to overactivity of the parathyroid glands is still in dispute. I shall comment, therefore, only upon the results of parathyroid insufficiency.

Tetany.—Some of the clinical phenomena of tetany were recognized more than one hundred years ago, when Clarke (1815) discussed spasm of the glottis and the rigidity of the extremities that is sometimes associated with it, and Kellie (1816) made a "note upon the swelling of the back of the hands and of the foot, and upon a spasmodic affection of the thumbs and toes which frequently accompanies it," describing a syndrome that is now recognized as tetany.

Clinical knowledge of this syndrome developed rapidly, thanks to the observations of many European observers (Steinheim, Dance, Tonnelle, Corvisart, Trousseau, Kussmaul, Erb, Chvostek, Hoffmann, Oddo, and von Frankl Hochwart). It was a long time, however, after the clinical syndrome had been well studied, before any clue as to the real nature of tetany was discovered. Weiss, in Billroth's clinic in Vienna, had observed the occasional appearance of tetany in patients after operation for the removal of goitre (tetania strumipriva), but it was not until 1890 that Gley, of Paris, proved experimentally that when the thyroid gland and the parathyroid glands are simultaneously extirpated in rabbits, tetany occurs, whereas when the thyroid gland alone is excised tetany does not occur. His observation, though extremely interesting, was wrongly interpreted, for he opined that possibly the parathyroid glands hypertrophy (when the thyroid gland alone is removed) so as to take over certain functions of the thyroid gland. In other words, he regarded the phenomena of tetany as due to thyroid removal, the simultaneous extirpation of the parathyroids preventing their compensatory activity. The true interpretation of Gley's findings came from the Italian observers Vassale and Generali (1896-97), and they also transferred the results of animal experiments to the explanation of human tetany. "If in man," said these observers, "the parathyroid glands are removed during thyroidectomy, tetany may appear; if they are not removed with the thyroid, then cachexia strumipriva or myxedema may appear."

After these experimental studies and clinical observations had been made, great activity was manifested by investigators in the domain of the thyroid and the parathyroid glands. It was soon firmly established that, 1, removal of the thyroid gland without simultaneous removal of the parathyroid glands causes myxedema without tetany, whereas, 2, removal of three or more parathyroid glands alone causes tetany without myxedema, and, 3, removal of both the thyroid gland and the parathyroid glands simultaneously causes tetany with myxedema. It was soon shown also that these facts hold for a large series of animals. Removal of or injury to, the parathyroid glands of dogs, cats, rabbits, rats, mice, goats, monkeys, hens, and frogs, can give rise to the symptoms that are observable in either acute or chronic tetany in man.

It thus became certain that complete parathyroidectomy or severe parathyroid insufficiency is followed by tetany, and many, like Pineles, have assumed that all forms of tetany are due to hypoparathyroidism. It is not yet certain, however, that this unitary conception of a parathyrogenous origin for all forms of tetany is valid. It may be that the unity of pathogenesis lies in certain metabolic conditions that can be produced either by parathyroid insufficiency or by other, nonparathyroid, causes. A unitary metabolic basis for tetany has been sought, 1, in disturbances of calcium metabolism; 2, in autointoxication from the gastrointestinal tract; 3, in disturbances of the acid base equilibrium; 4, in thymus intoxication; 5, in the accumulation of guanidin or guanidin derivatives in the blood tissues, and, 6, in insufficiency of production of certain specific ferments. One of the most interesting recent observations in connection with the pathogenesis of tetany has been the demonstration that this clinical syndrome can be experimentally produced in human beings by prolonged forced respiration (Collip and Backus; Grant and Goldman).

The clinical syndrome that we know as tetany may be either manifest or latent. In manifest tetany, there are spontaneous attacks of peculiar tonic spasm; these spasms may be limited to certain groups of muscles, or they may involve the whole body musculature. In latent tetany, these spontaneous attacks of tonic spasm are not present, but a peculiar hyperexcitability of the nervous system exists, and the attacks of tonic spasm can be easily elicited by artificial means.

In manifest tetany the spontaneous attacks of intermittent tonic contractions involve groups of muscles innervated by certain nerves and result in the assumption of certain definite attitudes by the extremities of the patient (obstetrical hand, carpopedal spasm), or they may appear as cramps of the laryngeal muscles (laryngospasm), or of the face and jaw muscles (facial spasm, trismus), or, occasionally, as spasms of other voluntary or involuntary muscles. All these muscle spasms occurring spontaneously point to hyperexcitability of the motor nerves. The hyperexcitability of the motor nerves is also manifested by increased response to stimulation by the galvanic current (Erb's phenomenon). This response is easily demonstrable in all cases both of manifest and latent tetany by means of exact measurements of the galvanic currents applied to the muscles. In children with carpopedal spasm, with laryngospasm, or with other manifestations of the spasmophile diathesis, this measurement of the electrical response of the motor nerves to galvanization is most important for diagnosis.

In testing for increased galvanic excitability of the motor nerves (Erb's phenomenon), it is best to follow the technic of von Pirquet (1907), in which the large indifferent electrode is placed upon the abdomen and the small electrode is placed upon the point to be stimulated (peroneal nerve, or median nerve). If a cathodal opening contraction (KOC) occurs with a current below five milliamperes in strength, we can be sure that there is increased galvanic excitability of the motor nerves.

Even if cathodal opening contraction does not occur, a mild degree of hyperexcitability can be assumed if an anodal opening contraction (AOC) appears with currents feebler than five milliamperes. The value of this method of examination, especially in children, has been emphasized in this country by Sedgwick (1912) and by J. B. Holmes (1916).

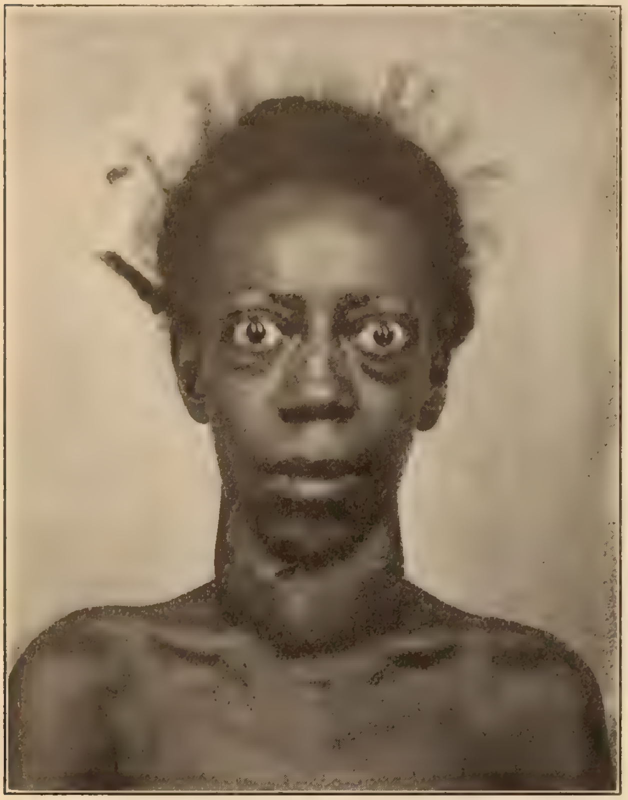


Fig. 1.—Young colored girl with outspoken Graves's disease.

Hyperexcitability of the sensory nerves and of the autonomic nerves is also demonstrable in both manifest and latent tetany, but the sensory and autonomic phenomena are far less helpful for diagnosis than are the motor phenomena. Upon hyperexcitability of the motor nerves depend also certain abnormal responses on mechanical stimulation. These, too, are very helpful in diagnosis. I refer to the Trousseau phenomenon, Chvostek's phenomenon, and the arm and leg phenomena of tetany (described by Poole, of New York, and others).

The Trousseau phenomenon is easily elicitable in most cases of tetany. As long ago as 1864 Trousseau pointed out that a ligature applied firmly about the upper arm will, in the intervals between attacks of manifest tetany, soon be followed by the typical attitude of obstetrical hand. In performing the test nowadays we apply either an Esmarch bandage at the middle of the upper arm, or, more conveniently still, the cuff of an ordinary blood pressure apparatus, raising the pressure to a height that will interrupt the arterial flow in the arm. In tetany the obstetrical hand attitude will usually become evident in from two to three minutes after the pressure has been applied.

Chvostek's sign, or the facial phenomenon described by the elder Chvostek in 1878, is also easily elicited when the mechanical excitability of the motor nerves is increased, as it is in tetany. One simply taps the region of the pes anserinus of the facial nerve with the tip of the finger or with a small percussion hammer, and notes whether this stimulation is followed by contraction of the muscles of the same side of the face. In marked hyperexcitability, there may be a contraction of all the muscles of the side of the face stimulated (Chvostek I). When the excitability is somewhat less great, there may be only a movement of the nostrils and a drawing of the angle of the mouth to the side (Chvostek II), whereas when there is merely slight increase of mechanical excitability, there may be only a slight twitch at the angle of the mouth (Chvostek III). This test can be easily applied, the whole procedure occupying only a few moments. If a positive result is obtained, other clues for the existence of tetany should be sought for. It is rare that Chvostek's sign is absent in tetany.

The socalled arm and leg phenomena of tetany are also helpful for diagnosis. Poole, of New York (1906) observed in tetany a constant response of contracture of the muscles of the upper extremity upon forcible abduction of the arm and of contracture of the muscles of the lower extremity upon forcible flexion at the thigh of the lower extremity extended at the knee. Similar observations appear to have been made earlier by Ferenczi (1904), and these phenomena were also carefully studied by Schlesinger, of Vienna (1910), who, at that time, was unaware of the earlier observations made in this country and in Italy.

In chronic tetany certain trophic disturbances are prone to occur. Thus, children who have had tetany often exhibit, later on, transverse furrows and small holelike defects in the teeth due to faulty development of the enamel. Sometimes these defects are visible in the form of several parallel horizontal grooves, especially on the incisor and canine teeth. Similar enamel defects occur in the teeth of rats in experimental tetany. Another trophic disturbance of great interest met with in chronic tetany is perinuclear cataract, discoverable by dilating the pupils and examining the lens with the aid of a strong plus glass. This perinuclear cataract is usually bilateral.

A whole series of forms of tetany has been described by clinical observers. They include the idiopathic tetany of workmen, maternity tetany, gastric tetany, tetany in infection and intoxications, postoperative tetany, and tetany after prolonged forced respiration. As I have said, many believe that all these forms of tetany have a common pathogenesis in hypoparathyroidism, but there is still some doubt regarding this point.

The treatment of tetany is far less satisfactory than many textbooks would lead us to assume. If the parathyroid glands have not been too extensively removed, or too severely injured at operation or by disease, they may regenerate gradually, especially if the patient is tided over by calcium therapy or by a restoration of the acid base equilibrium of the blood. Parathyroid extracts of various sorts have been employed, but it is as yet questionable how valuable they are in the treatment of tetany. In severe tetany, both acute and chronic, the attempt has been made to transplant parathyroid glands in order to effect a cure. Temporary benefit seems certainly attainable in this way, but whether or not a permanent cure can thus be effected is as yet doubtful. Certainly, transplants from animals of another species do not seem to grow in man, and transplants of human glands are attended by almost insuperable difficulties, though such transplantations have already been made in a number of instances. Even if transplantation from one human being to another can be successful, there will be great difficulty in securing human glands for transplantation for the human donor who will take the risk when he knows the dangers must indeed be heroic.

THE THYMUS GLAND SYNDROMES.

It is now generally believed that the thymus gland belongs to the hormonopoietic system, for it produces substances that are important for growth and for proper functioning of other organs, especially in early life, and overactivity of this gland in childhood, its persistence for an abnormally long time, or its revivescence in adulthood, may be responsible for serious symptoms.

Regarding states of underfunction of the thymus gland—socalled hypothymismus and athymismus—we are as yet very poorly informed, and since there is much dispute among experimental investigators concerning this point, I shall make no further reference to it.

Clinical syndromes due to overfunction of the thymus gland are, however, generally recognized. They have been described under various terms, including hyperthymismus, status thymicolymphaticus, asthma thymicum, and mors thymica. As early as 1855, Kopp called attention to the occurrence of sudden death in childhood following cyanosis and stridor; in these children, at autopsy, nothing abnormal except a hyperplastic thymus could be found. The later studies of Paltauf (1889), of Bartel (1912), and of Wiesel (1913), have thrown much light upon status thymicus and status thymicolymphaticus. Whereas some of the symptoms met with in these states are due to the mechanical pressure of the enlarged thymus, it seems certain that many of the symptoms depend upon the production of a thymus hormone in abnormal amounts. Haven Emerson, of New York, has given us careful descriptions of a number of clinical cases. In status lymphaticus there seems always to be an associated hypoplasia of the chromaffin system, whereas in status thymicus alone the chromaffin system may be normal. The frequent occurrence of hypoplasia of the cardiovascular system in association with status thymicolymphaticus has been emphasized by the pathological anatomists.

Status thymicolymphaticus.—In children presenting the status thymicolymphaticus there is usually enlargement of the tonsils and of the lymphadenoid tissue generally. An enlargement of the thymus gland can be made out on percussion, or on x ray examination of the chest. Such children often suffer from what their parents call attacks of holding their breath, which are, in reality, seizures of asphyxiation. The child on crying throws its head back, turns blue, may manifest convulsive jerkings, become unconscious, and, later, become relaxed. After the child has become unconscious in the attack, it lies limp and pallid for a few minutes, or longer, and, a little later on, may seem quite normal again. Usually such an attack is transient and harmless, although occasionally a child dies in the attack. These attacks of suffocation are common in infants between the sixth and twelfth month of life.

Sudden death in young children, without any obviously adequate cause, are usually instances of mors thymica occurring in a status thymicolymphaticus. Even young adults are subject to fatalities of this sort. Children who die in their sleep, or while taking a bath, or while undergoing punishment, or after an injection of antitoxin, or during narcosis, should be suspected of mors thymica unless another cause for the death can be demonstrated. In young adults, the mors thymica is sometimes erroneously attributed to heart failure, to shock, or to infection.

Patients with status thymicolymphaticus usually exhibit a pronounced lymphocytosis in the blood. The skin has a pasty look, the middle incisor teeth may be very large, and the lateral incisors very small. In young adults, or in older persons, who have earlier suffered from status thymicolymphaticus, the distribution of the hairs is often heterosexual; thus, in males the beard may be feebly developed, the hair over the body scanty or absent, and the crines pubis limited above by a horizontal line (as in women), rather than presenting the triangular arrangement characteristic of the normal male. In females with status thymicolymphaticus, on the other hand, the distribution of the hairs may resemble that of the masculine type.

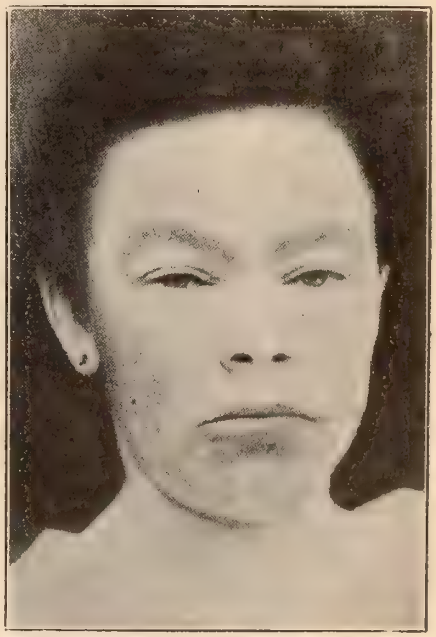


FIG. 2.—Woman suffering from Gull's disease. Note the exophthalmos, the narrow lid slits, the dry hair, the wrinkled forehead, the double chin, and the pudgy appearance.

A word may be said as to the treatment of status thymicolymphaticus. The mechanical effects of the enlarged thymus can often be done away with by deep röntgenization or by the application of radium, since either of these will reduce the size of the hyperplastic gland. Surgeons have shown the feasibility of thymectomy, and the operation has already many times been performed, but it would seem likely that radiotherapy will make surgical interference upon the thymus, at least in a majority of the cases, unnecessary. A careful dietetic hygienic régime should be planned for persons exhibiting the status thymicolymphaticus. Much can be done by the application of general measures to improve the health of these persons. In children, especially, codliver oil or syrup of the iodide of iron is often beneficial. When there is an associated insufficiency of the chromaffin system, the administration of suprarenal gland substance may be tried.

In certain forms of psoriasis it has been asserted recently that stimulation of the thymus gland by feeble röntgenization or feeble radium exposures is an effective form of therapy.

THE HYPOPHYSEAL SYNDROMES.

It is generally believed that gigantism and acromegaly are due to an overfunction of the hypophysis cerebri, and that one form of dystrophia adiposogenitalis is due to underfunction of the same gland. The hypophysis cerebri consists of three parts: 1, the anterior lobe; 2, the posterior lobe, and, 3, the pars intermedia (See Frederick Tilney's monograph, 1911). The anterior lobe is glandular, the posterior lobe nervous, whereas the pars intermedia consists of an epithelial layer covering the anterior surface of the posterior lobe. The anterior lobe probably produces substances that have to do with growth, especially with the growth of bone, and substances that determine, perhaps through the intermediation of the gonads, the development of the secondary sex characters. It is probable that the epithelium of the pars intermedia manufactures pituitrin or infundibulin. The posterior lobe or nervous part is made up chiefly of neuroglia, but this contains in its meshes colloidal or hyaline masses that may possibly represent an internal secretion that is discharged into the cerebrospinal fluid. Some believe that this colloidal substance found in the pars nervosa is a secretion which in reality is derived from the cells of the pars intermedia.

Complete removal, or destruction, of the hypophysis cerebri in animals leads to their death after the appearance of certain peculiar symptoms—tremor, fibrillary twitching, opisthotonos, bradycardia, hypothermia, apathy and coma (cachexia hypophysopriva acuta). Partial removal of the hypophysis in animals gives rise to obesity, increased carbohydrate tolerance, hypothermia, hypoplasia of the sex glands, retardation of skeletal growth, mental dullness, and sometimes polyuria (dystrophia hypophysopriva chronica).

Gigantism and acromegaly.—When there is overfunction of the hypophysis during the developmental period, before the epiphyseal lines of the long bones have closed, gigantism results. When the overfunction occurs in later life, the clinical syndrome known as acromegaly develops. P. Marie, of Paris, described the syndrome of acromegaly as early as 1886, and, later, Marinesco demonstrated certain pathological changes in the hypophysis cerebri, which he believed to be responsible for this syndrome. In this country, the hypophyseal syndromes have been admirably portrayed in Harvey Cushing's monograph (1912), and recently a finer analysis has been assayed by William Engelbach (1920).

The characteristic marks of a fully developed acromegaly are now very well known. Once seen, they could not easily be overlooked. The prominence of the acra, the broad nose, the sharply upturned and curved chin, the prominent malar bones and supraorbital arches, the oval or hexagonal face sometimes called the "nut cracker profile of Punch," the prominent occipital protuberance with a transverse groove in the skull above it, the spadelike hands with sausageshaped fingers, the enlargement of the feet, the kyphosis of the thoracic spine, and the obvious changes in the base of the skull (especially in the sella turcica), on röntgenographic examination are characteristic marks.

The syndrome of acromegaly usually develops slowly over a period of years. The head, especially the facial skull, and the hands and feet may slowly enlarge, and the enlargement be noticed by the patient's friends long before he is conscious of it himself. The story is told of a physician who had been known by his colleagues to be an acromegalic for years, but remained entirely unconscious of it himself until one day on looking into a mirror he caught sight of a man with acromegalic features. To his great surprise he found that the man was himself. In some patients, cerebral and genital symptoms appear years before the skeletal changes are noticed. Headache, sleepiness, apathy or disturbances of vision may lead a patient to his physician before there are any marked bony changes. Menstrual irregularities, and especially amenorrhea, may be the first symptom in females, or a diminution of libido and potentia may be the first sign in males. The characteristic spacing of the upper medial incisors (hag teeth) is due to enlargement of the maxilla, but the enlargement of this bone is usually much less pronounced than is that of the mandible. In some cases of acromegaly, certain of the viscera (heart, liver, spleen, pancreas, kidneys) become enlarged.

Several special forms of acromegaly have been described, including a painful form, an amyotrophic form, a form associated with gigantism, a form associated with obesity, a form associated with trophedema or with myxedema, and a form accompanied by severe nervous or mental symptoms.

Certain acromegalics, in the later stages of the disease, become obese. In these patients it is assumed that an earlier hyperfunction of the hypophysis has given place later to a hypofunction. It should be mentioned that Roussy has maintained that acromegaly is to be looked upon as due to a perversion of function rather than to hyperfunction of the hypophysis.

Dystrophia adiposogenitalis due to hypohypophysism.—When for any reason there is during development an insufficiency of hypophyseal function, a peculiar syndrome known as Froehlich's syndrome, or hypophyseal dystrophia adiposogenitalis, develops. The patient becomes obese, and the fat as a rule has a peculiar distribution; it is most abundant on the abdomen, buttocks, and proximal portions of the extremities. The skeletal development is faulty. This may appear as akromikria, or if the hypopituitarism occur very early, dwarfism results. The secondary sex characters fail to develop, or, if they develop, they present an abnormal appearance. The genital organs remain in a hypoplastic or infantile state. The skin of the body as a whole is usually pale, thin, soft and smooth.

Many of the patients presenting this form of dystrophia adiposogenitalis suffer from neoplasm, either of the hypophysis itself or of structures in its neighborhood. One sees very often, therefore, in association with the above mentioned endocrine symptoms, the general symptoms of increased intracranial pressure (headache, vomiting, bradycardia, etc.), and certain neighborhood symptoms, due to local pressure upon the optic chiasm or the optic nerves and the sella turcica. A bitemporal hemianopsia, or a bitemporal hemiachromatopsia, should always make one think of pressure upon the optic chiasm. The occurrence of diabetes insipidus, now known to be easily controllable by hypodermic injections of pituitrin, should also make one think of lesions of the hypophysis or of its neighborhood.

THE PINEAL SYNDROMES.

Syndromes due to tumors and cysts, involving the pineal body and its neighborhood, give rise to symptoms of increased intracranial pressure, to focal symptoms referable to the midbrain, and to certain symptoms that are believed to be due to disturbances of internal secretion, namely, premature puberty and changes in carbohydrate tolerance. It is not certain, however, that these endocrine phenomena are due to the epiphysis itself as an endocrine organ. They may depend upon neural disturbances of more distant endocrine glands. On account of the uncertainty that exists regarding the endocrine functions of the pineal body, the subject will not be further entered into here. Those who are interested should consult the articles by Bailey and Jelliffe (1911), Horrax (1916), and McCord (1917).

THE SUPRARENAL SYNDROMES.

It should be borne in mind that the human suprarenal gland represents a fusion of two entirely separate organs. Thus, the medulla of the suprarenal gland is a part of the larger chromaffin system, whereas the cortex of the suprarenal gland is a part of the larger interrenal system. The suprarenalopathies therefore include both chromaffiinopathies and interrenalopathies.

It is believed that both underfunction and overfunction of the chromaffin system may be responsible for clinical syndromes. Underfunction of the chromaffin system, often referred to in the bibliography as hypoadrenia, is met with in Addison's disease, in many acute infections and intoxications, and in certain other states. Overfunction of the chromaffin system is not, as yet, well understood. It may play a part in the production of chronic arterial hypertension, but this is not yet certain.

Similarly, both underfunction and overfunction of the interrenal system (suprarenal cortex in man) are held accountable by endocrinologists for certain abnormal clinical manifestations. Underfunction of the interrenal system occurs along with underfunction of the chromaffin system in Addison's disease. Overfunction of the interrenal system is believed to account for the peculiar syndromes known as pseudohermaphrodism, premature puberty, and suprarenal hirsutism and virilism of later life.

Addison's disease.—The syndrome known as Addison's disease was described by Thomas Addison in 1855. Its distinguishing marks are an idiopathic anemia associated with bronzing of the skin, digestive disturbances, and nervous disturbances. The patients develop a chronic cachexia and die. Addison believed the syndrome to be dependent upon disease of the suprarenal bodies. Later studies have shown that tuberculosis, syphilis, or neoplasm of the suprarenals can usually be demonstrated at autopsy upon patients dead of Addison's disease. In some cases, however, no such lesions can be found, and then a functional disturbance of the suprarenals has been assumed to have existed. It is now generally believed that Addison's disease does not occur except in persons with a congenitally defective chromaffin system.

This clinical syndrome, when full fledged, is easily recognizable by the asthenia, the melanoderma, the diarrhea, and other disturbances of the digestive system, and the arterial hypotension that constitute it. In the pure chronic cases, the fatal determination is often delayed for years. In the early stages of Addison's disease, and in its incomplete forms, diagnosis may be exceedingly difficult, the disorder sometimes being confused with hemochromatosis, with arsenical pigmentation, with pellagra, with Graves's disease, with cachexias of various sorts, or with certain skin diseases that are associated with pigmentation.

Other hypoadrenias.—Of late years, and especially during the recent war, the attention of physicians has been directed to forms of hypoadrenia other than that met with in Addison's disease. In these, too, the asthenia, the nausea and diarrhea, and the low blood pressure, are the marks that direct attention toward the syndromes. Sergent's white line on the abdomen, produced by friction of the ball of a finger, can usually be made manifest in hypoadrenia. Many of the patients seem to have been benefited by the administration of suprarenal gland substance.

Pseudohermaphrodism.—This condition is supposed to be due to a congenital form of hyperinterrenopathy. In other words, the endocrine disorder of the cortex of the suprarenal gland, or of some interrenal rest in an adjacent organ, is believed to begin in these cases before birth. Certain females, whose internal sex organs resemble those of a normal female, present external genitals that resemble those of the male; and certain males, whose internal sex organs resemble those of the normal male, have external genitals that resemble those of the female. The important things to remember in the diagnosis of pseudohermaphrodism are: 1, that the true sex of the person depends upon the character of the internal sex organs; and, 2, that the external genitals of the pseudohermaphrodite usually resemble those of a person of the sex opposite to that to which the patient really belongs.

Many of the women who have masqueraded in men's clothes (as soldiers, artisans, etc.) have been found to be pseudohermaphrodites. I know of one of these patients who attended school in Maryland as a boy. This patient was admitted to the men's ward of the urogenital clinic in one of our hospitals for study. On exploratory laparotomy the internal sex glands were found to consist of a uterus and ovaries; the patient was, in reality, a female. Dr. Quinby has reported the case.

Premature puberty.—Premature puberty (pubertas præcox) is believed to be an early postnatal form of hyperinterrenopathy. Children that appear normal at birth and perhaps for a brief time afterward soon become obese; they exhibit also an abnormally rapid growth and a premature development of the secondary sex organs, the external genitals especially undergoing changes that correspond to those of puberty. Boys of five or six may have the penis and testicles of an adolescent, and show abundant hair upon the mons pubis and in the axillæ. Little girls of two or three or eight years of age may begin to menstruate and to show the bodily and mental development of early adolescence. My friend, Dr. Margaret MacKellar, of Neemuch, Central India, tells me that premature puberty is not infrequently met with among Hindu children.

Many of these children manifesting premature puberty have tumors or a hyperplasia of the cortex of the suprarenal glands. It would seem, however, that the endocrine activity of this interrenal system is exerted through the intermediation of the internal secretory part of the sex glands, and similar clinical pictures can result from diseases of the ovaries or testicles themselves. I remember seeing in Dr. Kelly's clinic some years ago a girl of seven years with premature puberty. She was found to have an ovarian tumor. The case is to be reported by Dr. Leonard.

Adult hirsutism or virilism.—In this syndrome it is believed that we have to deal with a late, or adult, form of postnatal hyperinterrenopathy. Women between sixteen and twenty are most often affected, though the disorder may appear at any time between puberty and the menopause. Strong physically, these women often suggest the masculine type, the hypersthenia in them being in marked contrast with the asthenia of Addison's disease. There may be marked hypertrophy of the clitoris. Certain peculiar mental symptoms also suggestive of masculinity (egotism, overbearing tendency, aggressiveness) may also appear. These physical and mental traits are known as virilism.

The patients usually exhibit menstrual disturbances at the beginning of the malady. A characteristic feature is the change in the distribution and number of hairs on the body, for these women grow mustaches or beards and the pubic hair assumes a triangular distribution rather than being limited by a horizontal line above as in the normal female. Such women often, too, grow hair upon the abdomen, chest, shoulders, back, and extremities (hirsutism).

In the later stages of the disease the overfunction of the interrenal system may give place to a hypofunction and signs much like those of Addison's disease may appear (adynamia, emaciation, hypotension, etc.). Hypernephroma is not infrequently found in these patients.

THE PANCREATIC SYNDROMES.

The pancreas, besides producing an external secretion, possesses tissue (the islets of Langerhans) that manufactures an internal secretion that is necessary for the normal metabolism of carbohydrates. The relation of diabetes mellitus, in many instances at least, to destruction or to diminution of function of the islands of Langerhans in the pancreas, is now well established.

The clinical phenomena of diabetes mellitus are so well understood that they need no further comment. Thanks to the studies in this country of E. P. Joslin and of F. M. Allen, great progress has recently been made, as everyone knows, in the treatment of diabetes mellitus. I would call the attention of the general practitioner especially to the little *Manual of Diabetes* by Joslin, which may well be placed in the hands of every intelligent diabetic patient.

Very recently European observers have been experimenting upon the possibility of increasing the endocrine functions of the islands of Langerhans in the pancreas by stimulating them with the x rays or with radium. It is asserted that in some cases of diabetes mellitus good results can thus be obtained (see R. Kolisch's monograph, 1920).

THE GONADAL SYNDROMES.

The interstitial cells of the testes and the ovary are believed to produce hormones that are of great importance for the rest of the body. Not only do these hormones appear to be responsible for the development of the secondary sex characters and for their maintenance during adult life, but they also influence skeletal growth and the psychic functions. The closure of the epiphyseal lines and consequent limitation of the length of the extremities seems to depend upon the internal secretion of the gonads. Overfunction of the internal secretion of the gonads is known as hypergenitalism. It in turn is usually secondary to overactivity of the interrenal system (see above), but may sometimes be due to primary gonadal disease. Among the syndromes of gonadal origin I shall refer briefly to eunuchism, eunuchoidism, and the climacteric phenomena, which are believed to be due to loss of function or to diminution of function of the internal secretion of the gonads (agenitalism; hypogenitalism).

Eunuchism.—The physical and mental characteristics of true eunuchs have long been known. Castration of males was a common practice in ancient times, and even at present in Russia and in some of the Balkan states there is a religious sect, the Skopzi, whose members practise castration as a mutilating religious rite.

The physical and mental traits of eunuchs are fully described in the excellent monograph by Tandler and Grosz. The symptoms after castration vary according as the operation is performed in childhood or after puberty. In the former case, the penis, the prostate and the seminal vesicles remain small, and the patient never develops libido or potentia. When the operation is performed after puberty, however, the external genitals need not dwindle much, but the prostate undergoes atrophy; libido may persist, and even potentia also, at least for a time. When coitus remains possible, there may be ejaculation of prostatic secretion.

The changed psyche of eunuchs is a most interesting part of the clinical picture. The courage and aggressiveness of the normal male are usually lacking, though the intellectual powers may be great and artistic ability may not be decreased.

Physically, two types of eunuchs are distinguishable: 1, a tall, thin type, in which the lower half of the body is longer than the upper half, and the arms are unusually long; and, 2, a shorter, obese, pudgy type, with distribution of fat much like that met with in hypophyseal dystrophia adiposogenitalis. In both types the pelvis broadens, the skin remains pale or sallow, there is a sleepy look to the face, with drooping of the lateral half of the eyelids, and the person shows a tendency to general hypotrichosis.

Information regarding agenitalism of the female is far less definite, though great numbers of women have suffered the operation of bilateral oöphorectomy in early life. These persons should be very carefully studied from the endocrine point of view. The symptoms of the artificial menopause thus produced correspond closely to those of the true menopause (see below).

Eunuchoidism.—J. Griffiths, a quarter of a century ago, called attention to persons with hypoplastic sex organs whose bodily configuration resembled that of eunuchs. Two types of eunuchoids have been distinguished: 1, those in whom the condition is recognizable at puberty (early eunuchoidism), and, 2, those in which it appears after puberty, during the active period of sexual life but before the climacteric age (late eunuchoidism). Eunuchoid symptoms are not uncommon in patients with undescended testicles (cryptorchidism).

The eunuchoid, like the true eunuch, may be either tall or fat. The distribution of the fat and the faulty development of the secondary sex characters resemble those of eunuchs. Mentally, the eunuchoid is prone to be quiet, taciturn, and dependent. There is nearly always more or less disturbance of both libido and potentia. The skin usually assumes a peculiar character, being pale and delicate, and sometimes presenting innumerable minute wrinkles. Linear wrinkles radiating from the angles of the mouth are common, making these patients look prematurely old. Eunuchoidism has been studied especially in males. As yet but little is known of the hypogenitalism in females.

Recently attempts have been made to overcome eunuchoidism, and even eunuchism, by transplantation of the sex glands from one person to another. It is too early as yet to speak with confidence regarding results. Lydston, of Chicago, has been a pioneer in this field, and in Europe the animal experiments of Steinach are interesting.

CLIMATERIC SYNDROMES.

The phenomena of the menopause, artificial and natural, are every day met with by general practitioners. They consist on the physical side of a slowing of metabolism with tendency to obesity coincident with the cessation of menstruation, and signs of excitation or of loss of inhibition in autonomic domains (hot flushes; respiratory, cardiac and digestive disorders). Mentally, marked neurasthenic, psychasthenic, and even psychotic symptoms may be exhibited.

CONCLUSIONS.

The very brief synopsis of the main features of the classical endocrine syndromes given here will, I hope, convince you that we are now familiar with a group of definite syndromes of fairly well established endocrine origin. Let me emphasize again that the general practitioner who will familiarize himself with this small group of syndromes and will afterwards analyze the cases that present themselves to him for study from the viewpoint of these, will find it easier, later, to analyze the more complex cases in which more than one gland of internal secretion is markedly disturbed (multiglandular syndromes). For this reason I have not included in this summary the Timme syndrome, the thyrogenitohypophyseal syndromes, the thyrogenitosuprarenal syndromes, or the several forms of infantilism.

I am often asked for references to larger treatises dealing with the internal secretions and their disorders. The names of some of these are appended.

SELECTED REFERENCES.

Biedl, Artur: *The Internal Secretory Organs; Their Physiology and Pathology.* With a Preface by Leonard Williams; translated by Linda Foerster. London, 1912, J. Bale, Sons & Danielsson, 594, p. 8°.

Dock, G.: Diseases of the Ductless Glands, in *Modern Medicine,* Osler & McCrae, 1915, iv, 700-802.

Eppinger, H., Vogt, H., et al.: Die Krankheiten der Blutdrüsen in ihren Beziehungen zum Nervensystem, in *Handbuch der Neurologie* (Lewandowsky). Berlin, 1913, iv, Spez. Neurol., iii, 1-493.

Falta, W.: *The Ductless Glandular Diseases.* Philadelphia, 1915, P. Blakiston's Son & Co., 602 p. 8°.

Garrison, F. H.: Ductless Glands, Internal Secretions, and Hormonic Equilibrium, *Popular Science Monthly,* New York, 1914, lxxxv, 531; 1915, lxxxvi, 92; 142.

Gley, E.; *Les sécrétions internes.* Principles physiologiques. Applications à la pathologie. Paris, 1914, J. B. Baillière et fils, 96 p. 16°.

Lévi, L., and Rothschild, H.: Endocrinologie. Nouvelles études sur la physiopathologie du corps thyroide et des autres glandes endocrines (2e s.). Paris, 1911, O. Doin et fils, 624 p., 18 pl., 4°.

Marañon, G.: *Las glandulas de secreción interna y las enfermedades de la nutrición,* Madrid, 1914, 409. p, 8°.

Paton, Diarmid Noël: *The Nervous and Chemical Regulators of Metabolism,* London, 1913, Macmillan & Co., 227 p., 8°.

Pende, N.: *Endocrinologia,* patologia e clinica degli organi a secrezione interna, Milano, 1914, F. Vallardi, 802 p., 23 pl., 8°.

Sajous, Charles E. de M.: *The Internal Secretions and the Principles of Medicine,* 2 vol., 8°, Philadelphia, 1903-1907, F. A. Davis, 1923 p., 1 pl.

Schäfer, Sir Edward: *An Introduction to the Study of the Endocrine Glands and Internal Secretions,* Stanford University, California, 1914, 94 p.

Wagner von Jauregg, J., and Bayer, G.: *Lehrbuch der Organotherapie,* mit Berücksichtigung ihrer anatomischen und physiologischen Grundlagen, bearb., von K. Basch, G. Bayer, etc., Leipzig, 1914, G. Thieme, 527 p., 4°.

Disorders of Metabolism and Internal Secretions, in four volumes, edited by Barker, Hoskins and Mosenthal, D. Appleton & Co., New York. *In press.*

1035 North Calvert Street.

The Relation of Endocrinology to Vegetative or Visceral Neurology

Their Relation to Disease

By F. M. POTTENGER, M. D.,
Monrovia, Cal.

The past three or four decades in medicine have been devoted to the study of disease almost apart from the patient afflicted. Interest has been centred in the pathological changes in the tissues, in the bacteriology, and in the changes in the secretions and excretions of the patient. Much less thought has been given to the manner in which a microorganism produces the changes in reaction of an organ, or the changes in composition of a secretion or excretion. In fact, the patient's reactions and the means through which those reactions are produced, which constitute the clinical picture of disease, remain now, at the end of the second decade of this century, largely uninvestigated. The bridge between cause and effect in diseases which affect the vegetative structures of the body still remains to be constructed. The abutments have been completed, but the span is still unfinished. Its essential parts are known; but the manner in which the structure is built and the method in which it is used remains to be investigated. It is partially to supply this span that the studies of endocrinology and vegetative or visceral neurology are now being pursued.

A disease is known by the symptoms which it produces. Symptoms, for the most part, are due to disturbances in physiological control of organs and tissues. Physiological control, at least after the period of embryonic life, is vested in the nervous and endocrine systems. This control is of two kinds: 1, voluntary, vested in the voluntary nervous system; and 2, involuntary or vegetative, vested in the vegetative nervous system and the glands of internal secretion.

Voluntary control has only to do with the skeletal structures; consequently only diseases of these structures are produced through the voluntary nervous system. All other diseases—those which affect the smooth musculature of the body, the striated heart muscle, the secreting glands, the diseases which affect growth and repair, and those which have to do with altered metabolism—produce their symptoms through the vegetative nerves and the endocrine glands. The importance of carefully studying these systems, then, is selfevident, for it can be seen that the vegetative nerves and the endocrine glands furnish the bridge over which causes act in the production of many of the most important and most serious diseases which affect man. If only the physiological working of these systems is once understood, then their behavior under the influence of conditions of disease will be better appreciated. The physiological or harmonious workings of those structures may be disturbed by harmful stimuli of many different kinds which may be of either physical or psychical origin.

In order to understand the manifestations of any particular disease, then, it is not sufficient that we know the cause and the pathological changes produced by it in the tissues, secretions and excretions, we must also know the patient and the manner in which he reacts toward the disease. We must know his normal psychical state, and the peculiar psychical state, if any, produced by the disease; his normal nerve and endocrine balance, and any peculiar changes wrought in the nerve and endocrine balance by the disease. We can then better know his physical state and understand and interpret the symptoms which are present. It is plain that a person with an unstable psychical control cannot have a stable nerve or endocrine control and therefore cannot have normal physiological action. The individual who adapts and adjusts himself poorly to his physical environment, likewise the one who adapts and adjusts himself poorly to his social environment, cannot but have organs whose functions are poorly adapted to the work which they are called upon to perform.

The endocrine and vegetative nervous systems are closely related. Both influence and control the same body structures; the former through chemical stimulation, the latter through nerve stimulation. Whereas, in those structures which are supplied by the voluntary nervous system, we have muscles supplied by different nerves opposing each other to produce different actions, in the vegetative system we have different strengths of stimuli in those structures which are supplied by one system of nerves only producing different effects, and different nerves in those structures supplied by two systems, the one activating, the other inhibiting action. The internal secretions must act with, or in opposition to, the vegetative nerves because there can be no other action in vegetative structures than activation and inhibition of action. Internal secretions, however, like nerves are selective in their action. A sympathicotropic internal secretion does not necessarily stimulate all sympathetically innervated structures, nor does a parasympathicotropic secretion stimulate all parasympathetically innervated structures.

The action of the vegetative nerves is now well established for nearly all of the tissues of the body. It is known, with few exceptions, which tissues are activated alone by the sympathetic nerves and which by the parasympathetics; which are activated by the sympathetics and inhibited by the parasympathetics; also which are activated by the parasympathetics and inhibited by the sympathetics.

The relationship of certain glands of internal secretion to the vegetative nerves is also well established. For example, it is known that the adrenals, the thyroid and the pituitary are activated by the sympathetic nerves and that the internal secretions which they produce in turn cause similar action in tissues affected to that caused by sympathetic stimulation. The internal secretions of the testicle and the corpus luteum seem also to be related to the sympathetic system. The parathyroids, the pancreas, the secretine producing glands of the duodenum, seem to belong to the parasympathetic system. It is unfortunate that the relationship of all of the glands of internal secretion to the vegetative nervous system cannot be definitely stated. It would simplify clinical study very much if it were possible to do so.

Not only do impulses passing over the vegetative nerves and the secretions from the various endocrine glands produce action in some tissues and inhibition of action in others, but the degree of irritability of the sympathetic and parasympathetic divisions of the vegetative system and the degree of function of the various endocrine glands determine the manner in which patients will react to given stimuli. Thus, a person who suffers from hyperirritability of the sympathetic system is prone to react much more strongly to conditions which affect the sympathetic nerves and the sympathicotropic glands of internal secretion, such as the major emotions and toxemia, than the normal individual or the one who is vagotonic. He is also more susceptible to adrenalin and thyrotoxin. The vagotonic disposition, on the other hand, withstands sympathetic stimulation well, but is affected by such parasympathetic syndromes as hay fever, asthma, hypermotility of the gastrointestinal canal, hyperchlorhydria, and spastic colon. The hyperthyroid individual is sensitive to adrenalin, so is the sympathicotropic individual. The patient with hyperadrenia is likewise sensitive to thyroid secretion. The reverse of these is also true. Patients suffering from hypoadrenia are relatively insensitive to the thyroid hormone, and patients suffering from hypothyroid states are relatively insensitive to adrenalin.

Aside from the relationship which certain glands of internal secretion bear to either the sympathetic or parasympathetic systems, they also bear a certain relationship to each other. This is evident in the interrelationships of the thyroid, adrenals and pituitary on the one hand, and their antagonism to the pancreas, on the other, in the production of hyperglycemia and glycosuria. An increase of the secretion of the thyroid, adrenals, or pituitary may increase the blood sugar and produce glycosuria, so may a deficiency in the pancreas secretion. A normal pancreas, on the other hand, or an overstimulated pancreas increases sugar assimilation and prevents it from spilling over into the urine. With the relationships which the two divisions of the vegetative nervous system bear to each other partially understood, we are in position to state and establish some of the fundamental relationships which these systems bear to disease.

Since all smooth musculature and all secreting glands are innervated by vegetative nerves and activated by the products of the glands of internal secretion, and since the internal secretions act through or with one or the other divisions of the vegetative systems, either as a whole or in some part of its distribution; therefore, we can divide vegetative functions, whether they are controlled through nerves or through internal secretions, into those which depend upon the sympathetics and those which depend upon the parasympathetics for their activity.

The particular function of the sympathetic system, as a whole, seems to be the defense of the organism, while that of the parasympathetic system is the intake and digestion of food. Various phases of this subject have been discussed by Crile (1 and 2), Cannon (3), Brown (4), myself (5), and others. The function of procreation is presided over by both systems. Erection of the penis is accomplished through the sacral parasympathetic nerves, but most of the genital organs are activated by the sympathetics and some of them have no parasympathetic innervation at all.

The normal growth of the child, the form and shape of various portions of its body, its nerve and mental balance, depend very much upon certain internal secretions and the manner in which the vegetative nerves functionate. The time of maturity, the nature and strength of the sexual impulses, the secondary sexual characteristics, the form of growth, the stature of the adult, and his nerve and mental balance depend upon other glands of internal secretion. Throughout the entire life of an individual, from the cradle to the grave, the sympathetic nerves and the sympathicotropic glands of internal secretion shield him from enemies without; react to fear, anger and pain, and protect him from infections and such conditions as cold, heat and shock. The parasympathetics, on the other hand, supply him with an appetite for food; supply the digestive juices, salivary, gastric, biliary, pancreatic and intestinal, for its digestion; furnish the muscular power to mix it with these secretions, and propel it onward in the gut, and eject the refuse from the body. They also supply the oxygen for oxidizing it and transforming it into energy.

It can readily be seen that the great number of disease processes which express themselves in the vegetative structures affect these two functions of man. They either interfere with the mechanism of defense or the providing of the organism with sustenance through the digestion and assimilation of food. And, further, it can be seen that the individual will be able to execute these two outstanding purposes upon which his life depends, in accordance with the stability or instability of his vegetative nerves and his endocrine system.

The most serious action of a disease process is that it should interfere with man's ability to nourish himself and defend himself against hostile forces. True, he may lose an eye or a limb, or have have some disfiguring accident, all of which are of interest in his association with other members of society, and which may interfere to a certain extent with his defending or nourishing himself; but these conditions do not interfere directly and seriously with those functions of the organism which are absolutely essential to its existence and which are presided over by the vegetative nerves and endocrine glands.

Stability in these systems, then, is essential to normal or physiological working, and the individual who has an abnormal vegetative balance, wages his struggle for existence with a handicap. Parasympathicotonia (vagotonia), and sympathicotonia are not of interest as disturbances of the vegetative nerves alone, but they are of vital interest in that they determine to a certain degree the manner in which man will be able to nourish himself and defend himself against harm and enemies of all kinds. Hyperthyroidism interests us less as a disease of the thyroid than as it affects the individual as a whole and interferes with his mechanism of defense and nutrition, which is of tremendous importance. The hypoovaria, the eunuchoid and pituitary giant, the acromegalic, the patient suffering from Frölich's syndrome, are of far less interest to us as disease of the ovary, testicle and pituitary or as conditions which produce certain changes in form and stature, than they are as diseases which affect the entire vegetative balance and determine the manner in which the individual who suffers from them will be able to wage the battle for existence. While the primary cause is in these various glands, the ultimate effects are distributed to every system of the body, vegetative, voluntary and psychic. Between the vegetative and psychical systems a vicious circle is established, and each harmful stimulus in the one influences the other. Every disease process of a serious nature, therefore, must have a psychical side to it.

Students of endocrinology and vegetative neurology should direct their attention to these broad phases of the subject with the understanding that they are studying the fundamental animal reactions of the body, not a nervous system or a group of glands.

REFERENCES.

1. CRILE, GEORGE W.: *The Origin and Nature of the Emotions,* W. B. Saunders Company, Philadelphia, Pa., 1915.
2. *Idem: Man an Adaptive Mechanism,* Macmillan Company, New York, 1916.
3. CANNON, W. B.: *Bodily Changes in Pain, Hunger, and Fear,* D. Appleton & Co., 1916.
4. BROWN, LANGDON W.: *The Sympathetic Nervous System in Disease,* Frowde, and Hodder & Stoughton, Ltd., London, 1920.
5. POTTENGER, F. M.: The Special Services Rendered to the Human Organism by the Sympathetic and Parasympathetic Systems, Including Both Nerves and Glands of Internal Secretion, *Endocrinology,* vol. v, 1921.

An Anatomical Consideration of the Hypophysis Cerebri*

By WAYNE J. ATWELL,
Buffalo, N. Y.

The widespread interest which is being manifested in the endocrine organs has brought these glands to the attention of every practising physician. In the belief that a brief morphological consideration of one of the most complicated members of this group, based on modern investigations, would likely prove useful as a basis for the better understanding of principles underlying clinical applications, the present article has been prepared. A correct appreciation of the normal and abnormal functions of the pituitary body must be dependent upon a thorough knowledge of the development and the histology of its parts, as well as of the rather complex adult relationships which these parts hold toward one another.

GENERAL ANATOMY.

It has long been customary to speak of the hypophysis as consisting of an anterior and a posterior lobe. The use of such a terminology at the present time is productive of much confusion. From the embryological viewpoint anterior lobe has been understood to indicate that part of the gland derived from the epithelium of the mouth, and posterior lobe that part arising from the brain wall. From another viewpoint, partly anatomical and partly physiological, posterior lobe is used to indicate the neural part plus a certain part of the epithelial lobe. Conversely, anterior lobe means the epithelial minus this part. The anatomical basis for this terminology is the ease with which the hypophysis may be divided at the cleft, the names anterior and posterior lobes being then applied to the two parts thus produced. It is well known that the cleft in the hypophysis is the remains of the original cavity of the Rathke's pocket, the epithelial component, and that on dividing the gland at the cleft, as first shown by Peremeschko and by Lothringer, an epithelial layer remains attached to the neural portion. This thin layer, which closely invests the neural lobe and which in some cases even mingles with it, is called the Zwischenlappen by Stendell and the pars intermedia by Herring. Other names proposed include Markschicht (Peremeschko), Epithelsaum (Lothringer), and juxtaneural portion (Gentes). In this sense, then, posterior lobe means neural part plus pars intermedia. Posterior lobe extracts, such as are used in modern medical practice, are prepared from the tissues of the neural lobe, together with the surrounding epithelial layer, the pars intermedia. Thus to the physiologist also posterior lobe means these two portions taken together. Confusion exists due to the fact that embryologists persist in using posterior lobe to indicate the portion of neural origin only. Without question the use of the term in this latter sense should be discontinued, and the more precise and descriptive name pars nervosa or neural lobe substituted, as many recent writers have done.

We have seen that the hypophysis arises from neural and oral parts and that the latter is divided by the cleft into the pars intermedia and the anterior lobe. Recently the distinctness of a third epithelial lobe has been recognized. As early as the days of Müller and Mihalcovics a thin epithelial layer was observed, extending forward from under the infundibulum toward the optic chiasm. By these authors it was called merely the anterior process. Joris termed it the lobus bifurcatus, and Tilney names it the pars tuberalis because of the close relation which it bears to the tuber cinereum.

---

*From the Laboratories of Anatomy, Medical Department of the University of Buffalo.

As a result of numerous recent studies, the adult relations, the embryological history and the histological characters of the pars tuberalis are now fairly well established. A more detailed account of these features will be given.

Any adequate and comprehensive enumeration of the parts of the hypophysis then must include the neural lobe and the three epithelial lobes. The latter are: 1, the pars anterior propior, constituting the main bulk of the gland; 2, the pars intermedia, a thin strip investing and invading the neural lobe; and 3, the pars tuberalis, a thin layer closely applied to the infundibulum and the tuber cinereum, often completely surrounding the infundibular neck and extending forward to the optic chiasm (Fig. 1).

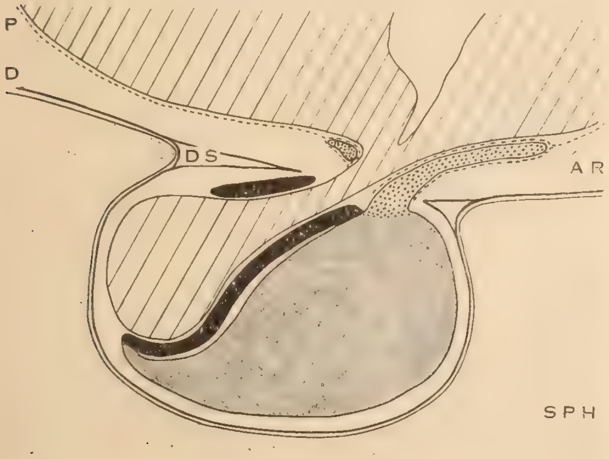


Fig. 1.—Diagrammatic midsagittal section of hypophysis; nasal end at right. Fine stipple, anterior lobe proper; coarse stipple, pars tuberalis; solid black, pars intermedia; lined, neural lobe and diencephalic floor. P, pia mater; AR, arachnoid spaces; D, dura mater; DS, diaphragma sellæ, with intercavernous sinus; SPH, sphenoid bone.

DEVELOPMENT.

So much has been written concerning the development of the hypophysis that any attempt to summarize, or simply to mention all the important contributions on the subject in the space allotted, would be impossible. However, a brief summary of the developmental processes by which the gland attains its adult form and relations, in the light of our present knowledge, seems not to be out of place in the present discussion. The description here given is based on the writer's contribution to the development of the hypophysis in the rabbit, upon a study of the development of the human hypophysis, and upon the writings of such modern investigators as Herring, Tilney, Bolk, Woerdeman, and Bruni.

The hypophysis is derived from two sources, both ectodermal. The oral evagination, known as Rathke's pocket, arises just anterior to the pharyngeal membrance, and pushes upward to meet an evagination of the brain wall, the primary infundibulum. In further development the primary infundibulum expands distally to form the infundibular process, is constricted proximally at the infundibular neck, or neural stalk, and at its attachment to the brain wall forms the infundibulum proper. The infundibular process becomes solid in most mammals, but retains its cavity, even in adult life, in the cat family.

Rathke's pocket gradually becomes constricted from the epithelium of the mouth cavity. The connection, as long as its persists, is known as the epithelial stalk and is at first a patent tube and then a solid rodlike structure. As the precartilage of the basisphenoid forms it has been observed in the rabbit that the stalk first loses its connection with the oral epithelium and later with the gland. Fragments of the epithelial stalk persisting inferior to the sphenoid constitute the pharyngeal hypophysis. According to Haberfield, a pharyngeal hypophysis is of frequent occurrence and is often the initial seat of tumors. Remains of the stalk occurring in the sella turcica with the hypophysis, but separate from it, are known as the parahypophysis.

The anterior lobe proper constitutes in most forms the major bulk of the gland and is developed from the anterior or ventral wall of the Rathke's pouch, which becomes markedly thickened. The pars intermedia is developed from the superodorsal wall of Rathke's pocket and is the least changed part of the original epithelial evagination. It remains a thin epithelial layer closely applied to the neural lobe. It is separated from the anterior lobe proper by the residual lumen of Rathke's pocket. This cavity, greatly reduced, persists in the young of all mammals, although with age it often becomes indistinguishable in man. In the dog the residual lumen undergoes an extensive branching, especially at its anterior end, so that a rather remarkable glandular appearance results.

The pars tuberalis is characterized by its paired origin from two buds, which appear early at the ventral end of Rathke's pocket, near the attachment of the epithelial stalk. These, the lateral lobes, or tuberal processes (Tilney) are at first some distance from the attachment of the neural lobe. As development proceeds, however, they acquire a position near the brain wall and, after fusing in front and behind the infundibulum, spread out to form a thin layer under the floor of the diencephalon and hypothalmus. It is to be noted that the residual lumen never intervenes between the pars tuberalis and the anterior lobe proper. In fact, the pars tuberalis has an origin very distinct from that of the pars intermedia, with which it is most often confused. Without recourse to detailed studies of the morphogenesis of the gland the distinctness of the pars tuberalis is not well apprehended. Herring's term "the tonguelike process of the pars intermedia" as applied to the pars tuberalis is misleading in that it is descriptive of adult relations only, and not of the origin or the distinctive histology of the part. Bell likewise, while not fully appreciating the individuality of the pars tuberalis, finds need for such a phrase as "that (portion) which is distant from the cleft—in what may be described as the reticulated portion of the pars intermedia."

With reference to the brain coverings also, the pars tuberalis has a relationship which is not shared by the pars intermedia. As may be seen from Fig. 1, the pars tuberalis lies imbedded in the pia mater of the diencephalonic floor and is separated (except where it surrounds the neural stalk) from the main body of the gland by the arachnoid spaces and the dura mater forming the diaphragma sellæ.

HISTOLOGY.

Anterior lobe proper.—The anterior lobe proper is usually spoken of as the chromophilic portion of the hypophysis, in contrast to the pars intermedia and the pars tuberalis—the socalled juxtaneural portion of Gentes—which are commonly described as chromophobic.

Tilney objects to the classification of the glandular cells of the hypophysis as chromophobes and chromophils. Twenty-five per cent. of the animals examined by him did not show chromophobes. In fact, he finds that it is not until the higher sauropsids are reached that true chromophobes make their appearance. In all vertebrate classes, however, there is a decisive cellular differentiation based upon stainability by acid and basic dyes. Tilney therefore suggests a primary classification of the cells as acidophils and basophils, instead of the former classification, whereby acidophils and basophils were made subclasses under the chromophils. Tilney believes that the acidophils and the basophils tend to keep themselves separate and distinct.

Bell recognizes three types of cells in the pars anterior, viz., chromophils, comprising acidophils and basophils, and neutrophils or chromophobes, "that is to say, the cells stain very faintly with basic dyes."

Pars intermedia.—This portion which closely conforms to the shape and extent of the neural lobe and more or less completely surrounds it, is composed of cells which are commonly described as chromophobe, neutrophil or faintly basophil, with finely granular cytoplasm. Peculiar elongated supporting cells vertically disposed in the pars intermedia have been noted in the carnivora and certain rodents. They are described by Lothringer, Retzius, Gemelli, Trautman, Herring and Atwell, and are best demonstrated by the Cajal or Golgi methods. Stendell has spoken of them as *ependymären Stützzellen* and of the branched cells observed in the cat's hypophysis as *Gliazellen.* He offers the explanation that these cells are elements which have wandered into the pars intermedia from the neural lobe. The only observation which may be interpreted as supporting Stendell's view have been recorded by me. In the rabbit embyro distinct regions of contact were seen, at which the neural lobe appeared to be sending projections into the pars intermedia. These contacts vary in number from one to five and are apparently transitory, being observed most constantly in the sixteen day embyros, and never later than the twentieth day of development. It is suggested that this may be the means by which the transfer of cells is accomplished. However, another possibility must be kept in mind, and that is that these appearances may be due to the sporadic recurrence of a condition common in the lower fishes, where the interdigitation of the neural lobe with the pars intermedia is very extensive.

Recently Lewis and Maurer have subjected the pars intermedia to a careful cytological study, making use of careful fixation methods, followed by the granular stains. They find that two kinds of cells occur in the pars intermedia: 1, cells related to the colloid containing vesicles, and evidently the secretory source of the colloid; 2, the secretory cells which are the characteristic elements of the pars intermedia, hitherto vaguely described as finely granular, basophile, or neutrophile. "The cells of the second type constitue the conspicuous element of this division of the gland enabling one to demarcate with perfect safety the limits of the physiological unit, providing the technical handling of the material is adequate to preserve the secretory antecedents in the cell. This material is highly labile and disappears rapidly from the cell after death." These cells are polygonal in shape and larger than the colloid producing cells. The nucleus is eccentric in position and the cytoplasm contains mitochondria gathered into a mass about the size of the nucleus.

Most writers note the fact that the pars intermedia contains more frequent and larger colloid cysts or acini than the anterior lobe. It seems not unlikely that at least three different structures have at times been confused and counted as cysts or acini. First there are the true colloid acini formed by the accumulation of colloid material among the cells of the true pars intermedia. Often, no doubt, the characteristic acini of the pars tuberalis (*vide infra*) have been spoken of incorrectly as structures of the pars intermedia. Lastly, the complicated branching which the residual lumen undergoes in the dog results in appearances which in sections might be interpreted as acini.

The pars intermedia frequently shows a tendency to invade the neural lobe by sending wedgeshaped processes, groups of cells, and isolated cells into the neural tissue. Based upon this fact and the presence of colloid material in the neural lobe is an important modern theory of the escape of the posterior lobe secretion, to be discussed in a later section.

Pars tuberalis. — The pars tuberalis has been recognized as a distinct lobe of the hypophysis only recently. Herring perceived that the "tonguelike process of the pars intermedia," as he calls the pars tuberalis, is distinctly more vascular than the part of the pars intermedia which borders the residual lumen. Tilney likewise notes this difference in vascularity and also the fact that the pars tuberalis is made up of cell masses with occasional small, relatively thick walled acini. The cells are basophilic with scanty cytoplasm. Baumgartner in reptiles, Parker in marsupials, and the writer in the rabbit and the ox, have noted the acinar structure of the pars tuberalis as one of its most striking characteristics. These acini are spoken of by Tilney as being walled by two layers of cells, while Parker and the writer have noted a single layer. Two other points are worthy of note: First, the pars tuberalis never shows a tendency to invade the neural tissue in the manner so characteristic for the pars intermedia; second, the ectodermal supporting cells sometimes found in the pars intermedia have never been described for the pars tuberalis.

Neural lobe.—Most authors agree in stating that the neural lobe is composed almost entirely of neuroglia cells and fibres. Very few observers have been able to lend support to the statement of Berkley that true nerve cells are to be found in this part. Ependymal cells are to be found lining the infundibular cavity where this is present, and processes from these cells may be traced out among the glia cells, toward the distal extremity of the lobe. In old age a considerable amount of pigment material is to be found among the elements of the neural lobe.

Cell nests, single cells and colloid droplets, or hyaline bodies, are frequently to be found in the neural lobe, and apparently are derived from the pars intermedia. Normally present to some extent, the colloid material is considerably increased in amount following severance of the neural stalk (Cushing). Thus the pars intermedia and the neural lobe form a structural complex, well deserving the term posterior lobe, as used in its physiological sense.

Considerable difference of opinion exists as to the presence of lymphatics in the hypophysis, some modern authors (Caselli, Herring) declaring for their presence, which Thaon strongly denies. Nerves, generally agreed to be sympathetic fibres derived from the carotid plexus, have been demonstrated in both the anterior and neural lobes. In the former, according to certain observers, the nerves leave the bloodvessels and end among the gland cells. In the neural lobe the nerves have never been observed to part company with the bloodvessels.

THE PHYSIOLOGY OF THE ANATOMICAL DIVISIONS OF THE HYPOPHYSIS.

In a gland composed of so many distinct parts and possessing such a variety of function as does the pituitary, it is of importance to localize any one of its functions in a particular lobe or lobes whenever this is possible. Upon such localization of function depends the selection of an appropriate therapy. If a given case of pituitary disorder may be diagnosed as due to heteractivity, i. e., hyperactivity of anterior lobe together with hypoactivity of posterior lobe, or *vise versa,* it is manifestly unwise to treat it by administration of the entire gland.

In a general way the functions of the two principal divisions of the pituitary are fairly well differentiated. Opinion is better unified with regard to the functions of the anterior lobe than as concerns the posterior. It is common to ascribe certain disturbances of skeletal growth and of genital development to altered function of the anterior lobe proper. With these major signs are often grouped certain minor symptoms, some of which cannot be considered distinctive. To the posterior lobe is ascribed control of metabolism, especially as regards the utilization of carbohydrates, and also, by some authors, as affecting the basal metabolic rate. That disturbances of this lobe influence the secretion of urine and the tonus and contraction of smooth muscle is also commonly held.

It is believed by histologists that the neural lobe does not develop glandular tissue of its own, although this fact has been repeatedly overlooked by clinical writers. It seems certain that the glandular cells and the secretion products found in this part are derived from the pars intermedia. The tendency of the pars intermedia to invade the neural lobe has been referred to in a previous paragraph. Based first on Herring's histological observations and later on the experimental data of Cushing, Goetsch, and others, the theory that the secretion of the pars intermedia passes through the neural lobe to gain the third ventricle and thus to enter the cerebrospinal fluid has gained wide acceptance. The latter part of this theory, though so widely given credence, is based on surprisingly little evidence. The experimental data of Cushing and Goetsch are often criticised because cerebrospinal fluid obtained from a hydrocephalic child was greatly concentrated and injected into a rabbit. In fact, Bell has recently come out strongly against this theory. It is not shown that the principal effects of the posterior lobe secretion are directed toward the central nervous system. That the secretion enters the cerebrospinal fluid later to gain the blood stream would seem an incredibly roundabout process.

That the secretion products formed in the pars intermedia, or at least some of them, pass into the neural lobe, seems established beyond question. Histological evidence is particularly striking in regard to this point. In fact, these two parts are so closely related to each other that they cannot be easily separated. They are probably to be considered a physiological unit. Numerous attempts have been made to differentiate their functions, however. Herring, in testing extracts made from pure pars intermedia and pure neural lobe, found that the former yields a substance which stimulates uterine contraction and the secretion of milk, but which exercises little or no effect on blood pressure in the cat. Extracts of neural lobe were found "to yield, in relatively larger amount, the material which stimulates the uterus and acts as a galactogogue." In addition, neural lobe extracts produce a rise of blood pressure. These results are at variance with those of Lewis, Miller, and Matthews, who succeeded in obtaining pressor effects on the dog with pure pars intermedia extracts. Atwell and Marinus were able to confirm the observations of the latter writers as regards this point. However, it is not improbable, as suggested by Herring, that the secretion of the pars intermedia is modified in some way after entering the neural lobe. Whether this is in the nature of an activation process, or a ripening, or something quite different, is not known. Recent clinical attempts to assign distinct rôles to the two components of the posterior lobe are too few to permit of making definite statement with assurance. Bab, supported by Englebach, suggests that hypofunction of the pars intermedia is responsible for hypophyseal polyuria, and that sugar metabolism is controlled by the neural lobe. These interesting theories should be carefully checked by histopathological methods.

There is comparative unanimity of opinion that the anterior lobe proper gives its secretion directly into the blood stream. Histological evidence seems to favor this view entirely. Only a few attempts have been made to determine what distinctive function, if any, is to be assigned to the pars tuberalis. Indications are that its function is unlike that of either the pars intermedia or the pars anterior proprior. Atwell and Marinus believe that the pars tuberalis is incapable of producing the effects on uterus, intestines and bloodvessels characteristic of the posterior lobe complex. Marinus has likewise shown that when fed to rats the pars tuberalis does not produce the growth effects of the anterior lobe proper.

BIBLIOGRAPHY.

Atwell: *Amer. Jour Anat.*, 1918, vol. xxiv, p. 271.

Atwell and Marinus: *Amer. Jour Physiol.*, 1918, vol. xlvii, p. 76.

Bab: *Münch. med. Wochnschr.*, 1916, vol. lxiii.

Baumgartner: *Jour, Morph.*, 1916, vol. xxviii.

Bell: *The Pituitary*, 1919, William Wood & Co.

Berkley: *Brain*, 1894, vol. xvii, p. 515.

Bolk: *Verslag d. Kon. Akad. v. Wetensch*, Amsterdam, 1910.

Caselli: *Studi Anat. e Speriment. Fisiopatologia d. Glandola Pituitaria*, Reggio nell' Emilia, 1900.

Cushing: *The Pituitary Body and Its Disorders*, 1912.

Cushing and Goetsch: *Amer. Jour. Physiol.*, 1910, vol. xxvii, p. 60.

Englebach: *Endocrinology*, 1920, vol. iv, p. 347.

Gemelli: *Jour. de l'Anat.*, 1905, an. 42.

Gentes: Soc. Sci. d'Arcachon, *Travaux de laborat.*, Bordeaux, 1907.

Herring: *Quart. Jour. Exper. Physiol.*, 1908, vol. i,; *idem*, 1913, vol. vi.

Joris: *Mém. cour. autr. publ.* Acad. Roy. Med. Belgique, 1907, Tome 19, fasc. 6.

Mihalcovics: *Arch. f. mikr. Anat.*, 1875, Bd. 11, S. 389.

Müller: *Jenaische Zeitschr. f. Med. u. Naturwiss.*, Bd. 6, S. 354.

Lewis and Maurer: *Anat. Rec.*, 1920, vol. xviii, p. 238.

Lewis, Miller, and Matthews: *Arch. Int. Med.*, 1911, vol. vii, p. 785.

Lothringer: *Arch. f. mikr. Anat.*, 1886, Bd. 28, S. 257.

Marinus: *Amer. Jour. Physiol.*, 1919, vol. xlix, p. 238.

Parker: *Jour. Anat.*, 1917, vol. li.

Peremeschko: *Archiv. f. path. Anat. u. Physiol.* (Virchow), 1867, Bd. 38, S. 329.

Retzius: *Biol. Untersuch.*, 1894, N. F., Bd. 6, S. 21.

Stendell: *Arch. f. mikr. Anat.*, 1913, Bd. 82.

Thaon: *L'hypophyse*, Paris, 1907.

Tilney: *Internat. Monatschr. f. Anat. u. Physiol.*, 1913, Bd. 30.

Trautman: *Arch. f. mikr. Anat.*, 1909, Bd. 74, S. 311.

Woerdeman: *Arch. f. mikr. Anat.*, 1914, Bd. 86.

24 High Street.

Suggestions Regarding the Role of the Hypophysis in Graves's Disease and Myxedema

By G. A. FRIEDMAN, M. D.,
New York,
Clinical Professor of Medicine, New York Polyclinic Hospital and Medical School; Visiting Physician, Beth David Hospital.

Hyperthyroid and hypothyroid conditions are the most typical endocrine disturbances in which the altered metabolic rate is fairly constant. Increased basal metabolism is specific for the former condition: decreased metabolic rate for the latter. Because Graves's disease and myxedema present clear types of ductless gland disorders, it does not necessarily mean that they are monoglandular disturbances. In a recent paper (1) the rôle of the medullary and cortical portions of the suprarenals, in the causation of some symptoms of exophthalmic goitre and myxedema, was discussed. The object of this paper is to show the part played by the hypophysis in the symptomatology of these two conditions. In suggesting the possible rôle of the hypophysis one must lay special emphasis on the fact that hypophyseal overactivity is not as characteristic of acromegaly as thyroid hyperfunction is of Graves's disease, because of the greater tendency in the former of a hypoactive state in the gland following the hyperactive state. Acromegaly, therefore, is a true hyperpituitarism only in its early stages.

Dystrophia adiposogenitalis, whether it be due, as Cushing (2) believes, to a primary hypopituitarism, or as Bell (3) has recently shown, to a secondary inactivity of the hypophysis following circulatory disturbances in the infundibular stalk, the fact remains that once this condition is established the pathological condition of the gland always points to underactivity, similar to the hypoactive state in myxedema.

All ductless gland disturbances may manifest themselves clinically without gross or microscopical changes. Bauer (4) and Hemmeter (5) named endocrine disturbances without actual pathological findings, "ductless gland neuroses." Hemmeter states that there are cases of exophthalmic goitre which were characterized by all the phenomena of that disease but were not relieved by thyroidectomy; sections of the removed thyroid were found to be normal. Neither hyperplasia of secreting vesicles, liquefaction of colloidal material or small round cell infiltration were noted. Arnold and Ponfick (6) have reported cases of acromegaly with the pituitary glands normal in all respects. Cushing (7) writes that the presence of a tumor and a large sella turcica is not necessary in the clinical picture of acromegaly.

In the Addison syndrome the adrenals may be intact: neither tuberculous nor atrophic. Varvaro and Pende (8) have reported such cases. Likewise in numerous cases of diabetes mellitus, the pancreatic islets may not show histological changes. From these facts one must conclude that the primary affection may lay in the nerve leading to the ductless glands, responding to excitatory stimuli with hyperfunction and to inhibitory stimuli with hypofunction. But in the majority of cases of typical endocrine disturbance we find an actual pathological change.

In order to show the interrelation of the hypophysis in Graves's disease and in myxedema one must show that actual pathological changes may occur in the pituitary in these conditions. If this is true, one may assume that some hyperthyroid and hypothyroid signs may be due to overactivity or underactivity of the hypophyseal gland.

That the hypophysis, especially the anterior lobe, is a ductless gland is a well established fact. This portion is also essential to life since its complete removal leads to death in a few days. Doubt exists, however, as to the function of the posterior lobe. Through the experiments of Paulesco, Cushing and Bell (9) it has been found that neither partial or complete removal of the pars posterior causes any symptoms.

It is generally believed that the pars intermedia has endocrine properties. Many believe that there is underactivity of this hypophyseal portion in diabetes insipidus. Some state that the pars intermedia normally controls urinary secretion. Keneway and Mottram (10) believe that the immediate restoration of a normal state of urine in diabetes insipidus, when pituitary extract is given, provides the strongest evidence of the regulating function of the gland in the secretion of urine. According to these authors, anterior lobe preparations are ineffective in checking the increased diureses in diabetes insipidus. The pars intermedia seems to have a function entirely different from the pars anterior.

It may be true, as Cushing (11) emphasized in 1913, that the neuroepithelial part of the pars posterior is a gland of external secretion; its active principle or principles reaching the blood stream by the way of the cerebrospinal fluid. While the pars nervosa is derived from the embryonic brain, the anterior lobe and the pars intermedia are derived from the pouch of Rathke, the pars intermedia, according to Bell (12), later becoming slightly differentiated from the rest of the anterior lobe.

The normal histology of the hypophysis in man is as follows: the anterior lobe consists of epithelial columns. Two sets of cells are characteristic for this hypophyseal portion; chromophiles with eosinophilic and basophilic granules, or oxyphilic cells; and chromophobes, nongranular or chief cells. The border line between the anterior lobe and the pars intermedia presents a poorly vascularized layer of connective tissue. In the pars intermedia follicle like structures are found with colloid. The pars nervosa consists of glial tissues, scattered cells and nerve fibres.

There is some divergence of opinion as to the significance of the different types of cells in the pars anterior. Gemelli (13) believes that the different types of cells have a different function. Benda (14) and others, however, hold the view that all the cells represent the same structure in different stages of activity. I am inclined to agree with Gemelli for the following reasons: it is known that during pregnancy in animals, as well as humans, the hypophysis hypertrophies. In pregnant women this gland may be found increased to twice its normal size. The chromophiles multiply to such an extent that in the later stages of gestation these cellular elements may occupy four fifths of the anterior lobe. Eosinophiles and basophiles are rarely seen in the latter stages of pregnancy. This apparatus consisting exclusively of chromophiles may be needed to inhibit uterine contraction and prevent premature labor.

The anterior lobe, as shown by Berkeley (15) is abundantly supplied with sympathetic fibres; the posterior lobe is devoid of such fibres. On account of this rich sympathetic nerve supply the interrelation between the anterior lobe and Graves's disease and myxedema becomes *a priori,* highly probable.

The chief criterion as to the state of function of a ductless gland is not the gross appearance, but the histopathological characteristics. In parenchymatous goitre there is a low degree of activity. Such goitres frequently disappear after treatment with iodides. In the hyperplastic goitre of Graves's disease, iodides intensify the condition. The thyroid may be in a state of overactivity and yet not be palpable. Goetsch (16) described a new clinical entity of latent hyperthyroidisms in young subjects in whom the thyroid was not found enlarged, and yet the patients belonging to this group reacted in the usual manner to the epinephrine test and partial thyroidectomy cured them. The histology of the thyroid in these cases showed diffuse adenomatosis. It has already been mentioned that in acromegaly the hypophysis must not necessarily become enlarged in order to produce clinical symptoms pointing to overactivity of the gland. However, there may be histological changes pointing to hyperfunction.

Kojima (17) has shown that when rats are fed with dry anterior lobe of ox pituitary in addition to their normal diet, most striking effects are produced in the anterior lobe. The number of the oxyphiles in the latter are greatly increased, two thirds or more of all the cells in the anterior lobe becoming chromophilic in character. Most of them are considerably enlarged. The cytoplasm is compact and is stained red by eosin and by acid fuchsin. The nuclei are somewhat enlarged and contain an abundance of chromatin. No distinctive changes are found in the pars intermedia.

There is a state of somnolence in animals after partial or complete removal of the anterior lobe which is similar to the condition met with in hibernating animals. In a series of the latter, Cushing and Goetsch (18) found the most notable changes in the pars anterior of the hypophysis. There was a marked decrease of eosinophiles and basophiles. When the animals awaken from their sleep, the characteristic cellular elements reappear. Since hibernation is a hypopituitary condition, one must assume that in man like changes must occur in the anterior lobe of the hypophysis in hypopituitarism.

Similar changes in the pituitary occur after feeding with thyroid. According to Kojima (19), if rats are fed for a month with dry ox thyroid in addition to their ordinary diet, there is an increase in the number of oxyphile cells in the anterior lobe. Changes in the pituitary similar to those found in hibernating animals occurred in his experiments after thyroidectomy. After total thyroidectomy (the parathyroids were reimplanted in the wound) the ordinary oxyphile cells were few in number. The pars intermedia was relatively thick. These changes were visible in Kojima's animals twenty-three days after thyroidectomy and they did not disappear after feeding thyroid to the thyroidectomized animals. Removal of the parathyroids alone did not appear to be productive of such marked changes in the hypophysis as removal of the thyroid, according to this author. Kojima emphasizes that it is the thyroidectomy which plays the most important part in producing the changes described above in the hypophyseal gland after removal of both thyroid and parathyroids. The increase in chromophiles in the anterior lobe after thyroid feeding points to a state of overactivity; a decrease in these cellular elements after thyroidectomy to underactivity. The same seems to hold true for the pars intermedia; large cells after thyroid feeding favor the assumption of overactivity; thickness or infiltration after thyroidectomy to low activity of the pituitary.

Fry (20) quotes Rogowitsch and Stieda as having concluded that the histopathology of the hypertrophied hypophysis which follows thyroidectomy in animals is indicative of a gland of low activity. Since Rogowitsch (21) made his discovery that hypophyseal enlargement follows thyroidectomy, clinicians have often noted considerable enlargement of the hypophysis, usually of the anterior lobe, in necropsies of myxedematous subjects. The enlargement in animals after thyroidectomy may actually be a transient hyperfunction at first; later, underactivity may take place as in the animals of Kojima's. Still later actual atrophy of the hypophysis may develop in the pituitary. Ponfick (22), at autopsy, found in a case of myxedema that the anterior lobe of the hypophysis had completely vanished; only the posterior lobe remained intact. Fry, after histological studies of the hypophysis in hyperplastic goitre and myxedema, points out that in the former condition the histology corresponds to a gland of high activity; in the latter to a gland of low activity. According to him, the hypertrophy of the pituitary in myxedema is due to an increase of connective tissue and chief cells. The chromophiles were found to be decreased in myxedema and increased in goitre. The pituitary in myxedema is anatomically a hypertrophied gland, but physiologically an atrophied one.

Hamig, Lorand, Mattiesen and Pettavel (23) found a pronounced hyperemia of the hypophysis in Graves's disease. Farner (24) described a case of Graves's disease in which the hypophysis showed an increase of eosinophiles in the anterior lobe. Bell (25) noted in cases of exophthalmic goitre a marked increase in basophiles. The histopathology of the hypophysis, especially of the anterior lobe in Graves's disease seems to be similar to that in hyperpituitarism, or in acromegalic cases. Benda and Lewis (26) have made a strong plea in favor of multiplicity of eosinophilic elements in acromegaly. Erdheim (27) believes that the eosinophiles are commonly gathered in adenomatous clusters in the anterior lobe of the pituitary in acromegalic cases.

From all these considerations it becomes possible that the hypophysis, especially the anterior lobe, has a share in the histopathology of exophthalmic goitre and myxedema. Hypophyseal overactivity without anatomical hypertrophy seems to be characteristic of the former condition and hypophyseal hypertrophy and hypoactivity of the latter. The fact that the anterior lobe possesses sympathetic nerve supply is greatly suggestive that some symptoms and signs of Graves's disease and of myxedema are partly due to the cooperation of the hypophysis.

It seems that basal metabolism studies are not absolutely convincing that the disturbed metabolic rate in hyperthyroid and hypothyroid states is solely due to the disturbance in the thyroid gland. Disorders of the hypophysis, however, were not studied in regard to the basal metabolism with the same persistency as hyperthyroid and hypothyroid conditions.

Acromegaly is often a combination of hyperpituitarism and hypopituitarism. Thus an increased metabolic rate in acromegaly may be expected only when it is a pure hyperpituitarism, or in its initial stage. In hypopituitary states, which are nearly as typical as hypothyroid states, one should expect to find a decreased metabolic rate more often. Benedict and Homans (28), and Porger and Ashner (29), carried out investigations in dogs in whom the hypophysis has been removed. These experiments showed unequivocally an appreciable reduction in the respiratory gaseous exchange. In Bernstein's (30) case of hypopituitarism the respiratory metabolism was certainly reduced.

Engelbach (31) in a recent paper objects to the theories previously advanced that the anterior lobe has no influence upon metabolism. From his report on metabolic studies in pituitary disorders, one becomes convinced that in hypopituitary states the basal metabolism is frequently decreased; in hyperpituitary states increased; but for obvious reasons not as often as in hyperthyroid states. Thus the emaciation in thyrotoxicosis must not be solely due to excesses of thyroid, but partly to excesses of anterior lobe secretion.

The hypophyseal gland may also play a part in the altered carbohydrate metabolism which occurs in Graves's disease and in myxedema. The tolerance for sugar assimilation is lowered in acromegaly, increased in dystrophia adiposogenitalis. Cramer and M'Call (32) state that the effect of thyroid as studied in dogs show a slight, but distinct, lowering of the limit of assimilation of glucose. It is well known that the sugar tolerance is greatly increased in myxedema. The tendency to glycosuria in hyperthyroid conditions is a well established fact. On the other hand, it is known that thyroidectomy has never been found to produce diabetes mellitus and that clinically diabetes has sometimes been found to develop in persons suffering from Graves's disease, but not in myxedematous subjects.

According to Kocher (33), changes in the pancreatic islets in Graves's disease are frequently absent even as in true diabetes. Inasmuch as there is a condition known as pituitary diabetes, proved experimentally one may assume that the tendency to glycosuria in Graves's disease and the absence of such tendency in myxedema, is due to the hypophysis; or in other words that low sugar tolerance in the former condition and the high sugar tolerance in the latter are the result of pituitary overactivity or underactivity, influenced by thyroid hyperfunction or hypofunction.

The mental irritability common to hyperpituitary and hyperthyroid states may be due in the latter condition either to hyperemia or to overactivity of the pituitary body. Insomnia, for instance, is a frequent symptom in severe cases of Graves's disease. Myxedematous patients on the other hand show stupor of mind and a great desire to sleep. In hypopituitary states, as well as in hibernating animals, hypersomnia is a well known symptom. Charcot (34) used to compare myxedematous subjects to hibernating animals.

Altered intestinal motility in Graves's disease and in myxedema may be due to overactivity of the hypophysis in the former condition and underactivity in the latter. It was mentioned in a previous paper (35) that in the vagal type of Graves's disease there is marked spasticity of the colon; in myxedema pronounced atony. The spasticity in the lower colon may be due to overactivity of the hypophysis; the atony to underactivity.

Engelbach (36) states that in hyperpituitarism one frequently finds intestinal spasticity and in hypopituitarism intestinal atony. Inasmuch as posterior lobe extract injections cause spasticity, this effect is probably due to the pars intermedia. We have seen from the experiments of Kojima that thyroid feeding in rats brings about changes in this hypophyseal portion which may be interpreted as overactivity; the reverse occurs in the pars intermedia after thyroidectomy. It is highly probable that normally the pars intermedia controls peristalsis, especially of the lower colon. The relation of the pituitary hormones to organs chiefly innervated by the pelvic nerves is well known. It is possible, therefore, that the pars intermedia not only controls the urinary secretion, but partly intestinal peristalsis.

It should be mentioned that polyuria which frequently occurs in Graves's disease and diminished diuresis in myxedema are not dependent upon the hypophysis, but upon the suprarenals. It is known that epinephrine increases diuresis and adrenal cortex checks it. If our viewpoint, defended in a paper (37), is correct, that there is an overactivity of the adrenal medulla and underactivity of cortex in exophthalmic goitre, underactivity of the medulla and overactivity of cortex in myxedema, the frequent polyuria in the former condition and the diminished diuresis in the latter would actually be due to altered function in the adrenal glands.

Women affected with Graves's disease are frequently sterile and when they conceive, miscarriages are frequent. This is particularly true in severe cases. In mild cases labor may be normal and even a natural cessation of the disease may ensue after delivery. On the other hand, Halstead (38) has shown by animal experimentation that partial extirpation of the thyroid does not prevent normal carrying of young.

Kirk (39) observed a myxedematous patient with thirteen children, another with eight in the course of the disease. Hunn and Prudden (40) counted three hundred children and only twenty-nine miscarriages among sixty-four married women who suffered from myxedema. It is highly probable that the histological changes in the hypophysis are slight in mild cases of Graves's disease and when the chief cells multiply, the latter overbalance the chromophiles. But in severe cases of Graves's disease in which the multiplication of the chromophiles may be very extensive, the pregnancy cells do not overbalance the effect of the former and premature contraction of the uterus will occur. In myxedema the chromophiles are on the increase. The multiplication of these cells during pregnancy serves as an additional check to prevent premature labor.

The anterior lobe of the hypophysis controls skeletal growth. Peritz (41) believes that the intensive growth of the bones in length with acceleration of epiphyseal closure which is found off and on in Graves's disease may be ascribed to a functional disturbance of the hypophysis. Holmgreen (42) pointed out that the youthful Basedow patients show an accelerated growth in height and a somewhat premature closure of the epiphyseal junctures. Kocher (43) states that there are known cases showing both acromegaly and Graves's disease together. Ballet (44) reports a nineteen year old girl with Graves's disease and giantism.

McGarrison (45) on the other hand writes that the failure of nutrition leads to cessation or retardation of the process of ossification in those cases where growth is not complete (infantile and juvenile myxedema). In old subjects the teeth may become ground down, leaving broad, flat surfaces. In some cases observed by him in the Himalayas this was a noticeable feature. In hypophyseal dystrophy the growth disturbance is similar to that in hypothyroidism. Burnie (46) states that in high degrees of growth disturbances in hypopituitarism the closure of certain epiphyseal structures is markedly delayed. The influence upon skeletal growth in Graves's disease and myxedema may be in part attributed to the hypophysis.

SUMMARY.

The hypophysis seems to show histological changes in Graves's disease similar to those in hyperpituitarism and in myxedema to those in hypopituitarism. Therefore there is a certain degree of hypophyseal hyperactivity in hyperthyroid and of hypoactivity of the pituitary in hypothyroid states. Chromophilia of the anterior lobe is characteristic for Graves's disease: chromophobia for myxedema. The following symptoms and signs of Graves's disease may be in part attributed to hypophyseal overactivity:

The increased metabolic rate, especially emaciation.
The tendency to glycosuria.
Mental irritability, especially insomnia.
Intestinal spasticity.
The tendency to miscarriages.
Skeletal growth, especially acceleration of epiphyseal closure.

The symptoms and signs of myxedema attributed to hypophyseal underactivity are as follows:

The decreased metabolic rate, respectively adiposity.
Higher sugar tolerance and absence of glycosuria.
Mental depression, respectively somnolence.
Intestinal atony.
Rarity of miscarriage.
Skeletal growth: retardation of epiphyseal closure.

CONCLUSIONS.

1. It is highly suggestive that there may be a mild overactivity of the hypophysis in Graves's disease and a mild underactivity in myxedema.

2. Pituitary products therefore should be contraindicated in the treatment of exophthalmic goitre patients and indicated in addition to thyroid in myxedematous subjects.

REFERENCES.

1. Friedman, G. A.: The Possible Relation of the Adrenal Cortex to Graves's Disease and to Myxedema, *Medical Record*, vol. xcix, No. 8, 1921.
2. Cushing, Harvey: *The Pituitary Body and Its Disorders*, J. B. Lippincott Company, Philadelphia and London.
3. Bell, W. Blair: Experimental Operations on the Pituitary, *Quarterly Journal of Experimental Physiology*, 11, 1917, p. 77.
4. Bauer, J.: Zur Functionsprufung des Vegetativen Nervensystems, *Dtsch. Arch. f. klin. Med.*, 1912, 107, 39.
5. Hemmeter, J. C.: Hypertonicity and Hypotonicity of the Vagus and the Sympathetic Nervous System, New York Medical Journal, 1914, 99, 101.
6. Arnold and Ponfick: Quoted by Cushing (2). p. 20.
7. Cushing: *Ibid* (2), p. 20.
8. Varvaro and Pende: Quoted by Bauer, Erwin: Untersuchungen über di, Funktion der Nebenniere, Pigmentbildung und Morbid Addisonii, *Virch. Arch.*, 225, 1918, 1-15.
9. Paulesco, Cushing and Bell: *Ibid* (3).
10. Kennaway, E. L., and Mottram, J. C.: Observations on two cases of Diabetes Insipidus, etc., *Quarterly Journal of Medicine*, vol. xii, 1918-1919, 225.
11. Cushing, H.: Concerning the Symptomatic Differentiation between Disorders of the Two Lobes of the Pituitary Body, *American Journal of Medical Sciences*, March, 1913, 3. vol. cxiv, p. 313.
12. Bell, W. Blair: *The Pituitary*, William Wood & Co., New York, 1919, p. 13.
13. Gemelli: Quoted by Bell (12), p. 89.
14. Benda: Quoted by Bell (12), p. 91.
15. Berkeley: Quoted by Bell (12), p. 32.
16. Goetsch, Emil: Studies on Disorders of the Thyroid Gland, etc., *Endocrinology*, vol. iv, 1920, p. 389.
17. Kojima, Masahara: Studies on the Endocrine Glands, *Quarterly Journal of Experimental Physiol.*, vol. xi, 1917, p. 306.
18. Cushing, Harvey, and Goetsch, Emil: Hibernation of the Pituitary Body, *The Journal of Experimental Medicine*, July 1, 1915, vol. xxii, No. 1. pp. 25-47.
19. Kojima, Masahara: L. c (17), p. 320.
20. Fry, H. J. B.: The Pituitary Gland in Diabetes Mellitus and Disorders of the Glands of Internal Secretion, *Quarterly Journal of Medicine*, vol. viii, 1914-1915, p. 277.
21. Rogowitsch: Quoted by Fry (20).
22. Ponfick, E.: Myxedem und Hypophysis, *Zt. f. kl. Med.*, 1899, xxxviii.
23. Hämig, Lorand, Mattiesen, and Pettavel: Quoted by Kocher, p. 749.
24. Farner: Quoted by Kocher, p. 749.
25. Bell: l. c, 12, 124.
26. Benda and Lewis: l. c. Cushing (2), p. 20.
27. Erdheim: l. c. Cushing (2), p. 20.
28. Benedict and Homans: Quoted by Falta Meyers: *The Ductless Glandular Diseases*, Second Edition, p. 290, Philadelphia, P. Blakiston's Son & Co.
29. Porges and Aschner: l. c. 28, p. 290.
30. Bernstein: l. c. 28, p. 290.
31. Engelbach, William: Classification of the Disorders of the Hypophysis, *Endocrinology*, vol. iv, No. 3, Serial No. 15, pp. 347-365.
32. Cramer and M'Call: Carbohydrate Metabolism in Relation to the Thyroid Gland, *Quarterly Journal of Experimental Physiology*, vol xi, 1917, pp. 59-76.
33. Kocher, Albert: Morbus Basedowii. Krauss, F., and Brugsch, T.: *Spezielle Pathologie u. Therapie innerer Krankheiten*, p. 798.
34. Charcot: Falta, Myers, p. 110.
35. Friedman, G. A.: The Probable Endocrine Origin of Peptic Ulcer, the *Journal A. M. A.*, November 9, 1918, vol lxxi, pp. 1843-1847.
36. Engelbach: L. c. (31).
37. Friedman, G. A.: L. c. (1).
38. Halstead: Quoted by Falta Myers, p. 116.
39. Kirk, R.: Myxedema, *Glasgow Medical Journal*, 1883, No. 6, p. 452; 1884, No. 1, p. 1.
40. Hunn, H., and Prudden, M.: Myxedema—Four Cases with Two Autopsies, *American Journal of Medical Sciences*, 1888, vol. xcvi, pp. 4 and 140.
41. Peritz, George: Akromegalie and Gigantismus, Kraus und Brugsch (33), p. 633.
42. Holmgreen: Quoted by Falta Myers, p. 83.
43. Kocher: L. c. 33, p. 779.
44. Ballett: Falta Myers (28), p. 83.
45. McGarrison, Robert: *The Thyroid Gland*, William Wood & Co., p. 183.
46. Bournier: Quoted from Falta Myers, p. 310.

1000 Park Avenue.

A Survey of Endocrinology*

By WALTER TIMME, M. D.,
New York.

In trying to give a more or less comprehensive view of the internal glandular system, of course, in this paper only the salient points, the high spots, can be touched, and I apologize in advance for any omissions that may be apparent.

For purposes of presentation, and really for understanding, I think it is a rather good plan to conceive of the human span of life as divided into three cycles, the first of those terminating with the beginning of youth; the second from that point to the prime of life, and the third from the prime of life through senescence to death. In order to understand the reason for our existence, you must understand the different goal that each individual has in each one of these periods of life.

The first period is that in which development, accretion and growth take place. The individual is not capable of taking care of himself. The second period is that in which all these things having been attained, the goal is of a different character. The goal then is for survival and for reproduction of his kind. And the third period is that in which there is a gradual decay and deterioration of all the elements that made up the first two periods.

---

*Presented at a meeting of the staff of the Hospital for Joint Diseases, January 25, 1921.

Therefore, since the goal in each of the three cycles is different, the chemistry of the individual must be different. The first period, that which terminates at the age of puberty, is the period during which accretion and growth and development take place. It is during that period that the two glands controlling development and accretion are at their greatest activity, and those two glands are the thymus and the pineal.

Under the activity of the thymus or, at any rate, correlative with the height of its function, we have growth of the bony skeleton. While this takes place, sexual development is held in abeyance. If the thymus gland acts normally, it should degenerate or involute at the end of this first period. If it prolongs its involution to a later period than that, then all the elements of the first cycle are carried over to the second. The first cycle was prolonged. We then have in the second period a symptomatology largely or, to a certain extent, similar to that in the first. Childhood characteristics are retained; childish reactions are the order of the day; the external appearance of the being is more or less of the youthful character.

So that a being in whom the thymus gland persists in acting after it should have deteriorated, namely, the state which is known as status thymicolymphaticus, which is prolonged, the being has the appearance of a child externally, with a smooth skin. There is a lack of development. The secondary hairy characteristics are not developed. The blood pressure remains low. As is the case with the great majority of these involution cases, the blood vessels remain small and narrow, and the chromatin system remains in a state of low development. So that with the low blood pressure and the lack of the wherewithal to give push and energy to any sudden call for activity, there is danger in such activity or in anything producing shock or sudden exertion.

So that a subinvoluted case, one which is constantly in danger of exhausting a low adrenal system, may die on the operating table from the first few whiffs of chloroform or in a competitive game, or from running upstairs. Any sudden exertion may produce death in this type of patient. Attacks of fainting are frequently produced from these causes. The few cases that have come to autopsy have shown that the condition of death is not produced by the large thymus gland pressing upon the trachea, but actually by hemorrhage in the small suprarenals. So that death is really an adrenal death.

In those individuals in whom the thymus gland does not involute at the proper time, but involutes earlier than the time set normally for its disappearance, we have the other effect, namely, one in which the being appears older than he really is, the old-young type, with a certain amount of precocity. He goes with his elders and engages in conversation with them. His genital system develops earlier. His adrenal system, not being opposed by whatever secretion the thymus may have, is overactive. So that such an individual easily becomes excited. He has not the proper inhibition. With that there is a rapid development of the body hair and secondary sexual characteristics. There is also a limitation of growth, so that those beings cease growing earlier than others and remain small. The epiphyses become united to the shafts of the bone at an earlier age in contradistinction to the other cases where the individual keeps on growing, a different kind of giantism from that produced by a pituitary hyperactivity. Such a case of giantism is beautifully illustrated by Cushing under his Giant Turner case. Giant Turner was not an acromegalic. He was this distinct thymic type of giantism, and on autopsy the suprarenal glands were extremely minute, his death being an asthenic death.

THE PINEAL.

It is supposed that the pineal gland has to do, in the first place, with muscular development. At any rate those cases in which there is an early involution of the pineal gland, determined by x ray examination of the skull as having pineal shadows, are all muscularly asthenic. Those forms of asthenia vary all the way from mild muscular fatigability on slight exertion to the extreme types of muscular dystrophy. X ray pictures of several such skulls showed this pineal shadow early in life. One was a case of hereditary process of muscular dystrophy, and all show, even in early life, this pineal shadow.

With a pineal gland, then, that involutes too early we have this muscular disturbance. With it, on the other hand, we have an early development of the gonads. So that again the second cycle of life is ushered in too soon. Now, the gonadal disturbance is dependent upon the thymus, and the pineal disturbances that I have just tried to outline are to a certain extent similar; but they have some points of differentiation which it is important to note.

The genital organs that are present in a being who has a subinvoluted thymus gland are small, perhaps, but always of a reversive type. By that I mean, that in the male the scrotal fold does not come below the penis but has a band above the base of the penis very much like the labia minora of the female. In the pineal type of subinvolution, the genital development, while it is lagging, is only lagging in size and not in other characteristics. So that the individual with a prolonged activity of his pineal gland will have small sex organs, although they are not reversive.

When we come to the second cycle of life we have again a different goal. The first cycle brings us to our fullest development of muscle, of growth, of strength, and all preparation is made for this second cycle.

The second cycle is one in which we have to fight for our existence, and in order to do that we must be provided with the proper material. The first thing that is necessary is an energy supply. The energy supply is largely that of blood sugar. A muscle may contract in an atmosphere of carbon dioxide, but it must have sugar. It cannot contract without the presence of sugar in the blood. The first thing that is necessary to muscular activity in order that we may fight or fly is the blood sugar content, a sufficiently high blood sugar content. And the second thing that is necessary is an alertness and a quickness of perception which will enable us to use our energy to the best advantage.

There are endocrine glands within us that help us accomplish these various tasks, and they are three in number: the thyroid, the adrenals, and the pituitary. These three glands are more or less active throughout our life. In the first cycle they are not the dominant ones, but they will control in the elements of degree and periodicity and quantity the activities of the other glands; whereas, in the second cycle of life they control to a certain extent the activities of the gonads, but largely the production of the energy factors.

THE THYROID.

The first of these, the thyroid gland, is perhaps of the most interest. We know more about it than either of the others, and it will engage our attention first. The function of the thyroid gland is supposed to be that of a catalyzer. By virtue of its presence it causes amino acids to be further decomposed into carbon dioxide, water, and ammonium carbonate, the amino acids being produced originally by the breaking up of the cell through its activity.

The thyroid gland, therefore, prepares these partially split up proteins for release from the body in the form of water, carbon dioxide, and ammonium carbonate. So that this helps us to get rid of all the burned up protein material of the body.

If this activity is impaired, what results? The first thing is that the amino acids cannot be discarded properly in a given space of time. They remain to clog up the individual's cells. There are points of predilection where they are deposited—in the joints and muscles and elsewhere, and as this condition progresses, the cell activity becomes less and less. Oxidation becomes lower and the entire body economy slows down, and then we have a slower pulse, a lower blood pressure, a lower temperature, a lower bodily activity, a lower cerebral activity; and we have a gain in weight.

On the other hand, if the thyroid gland is overactive, then a reverse condition obtains. The amino acids are rapidly decomposed and converted into lower forms, so rapidly that the cell is freed earlier than it otherwise would, and makes room, as it were, for further oxidation. More and more is this activity carried on so that a condition of more or less unstable equilibrium occurs, and the partially decomposed proteins are more and more rapidly given off, the body becomes more and more rapidly oxidized, and as a result we have a heightened oxidation, a heightened temperature, if the adrenals are properly balanced, and a higher blood pressure and a more rapid pulse and a loss of weight. That, in short, is the *raison d'etre* for the varying types of hypothyroidism we encounter daily.

The individuals that have these different types of thyroid disturbance give outwardly many of the manifestations of such a disturbed state. If the disturbance occurs during the first cycle in life, then growth is more or less abnormal. If oxidation proceeds too rapidly in the first cycle of life, we have a certain excessive growth; also under the influence of the thyroid in its effect upon the thymus gland. Growth then becomes rapid, but in point of length. So that thyroid individuals are long rather than broad. Their hands are thin; their fingers are long; their head is long. There is a general tendency to length rather than to breadth in these individuals.

If, however, the thyroid does not become hyperactive until the second cycle of life is produced, then we do not have these structural changes any longer. We may have a condition of hyperthyroidism in an individual, the manifestations having been produced in the structural time of life. Or, we may have in an individual today in the second cycle of life hyperthyroidism in a body which was hypothyroid. In other words, the signs of hypothyroidism in growth—shortness of stature, diminution of bodily hair, diminution or absolute elimination of a third of the eyebrow—can only be taken as a sign that at that time those things were produced we had hypothyroidism, but we may have a hyperthyroid state later in life. You must not be mistaken by the external manifestations in making a diagnosis of the individual's present status.

THE PITUITARY.

The next gland which will engage our attention is the pituitary. The pituitary body is of extreme interest. In the first place, its very situation gives us a key to its importance. It is actually a skull within another skull, designed by Nature, therefore, to be the most amply protected tissue, perhaps, in the whole body. It is especially served by vessels and nerves from the cavernous plexus of the sympathetic. The slightest increase in the blood supply of the brain immediately practically produces an engorgement of the vessels of the pituitary with a tendency to a rapid increase in its size. That fact is the basis for many of the signs of pituitary disturbance—not the metabolic disturbance produced by the enlargement, but by the physical enlargement within a capsule too small to accommodate the gland.

The pituitary service to the body is probably that of controlling periodicity, so that the periodic conditions of sleep and wakefulness, the periodic conditions of menstruation are under its control, and any change in periodicity in the vegetative nervous system may usually be credited to a disturbance of the function of the pituitary gland.

It also has a seasonal change in growth, as Cushing and Goetsch have shown, in hibernating animals. The pituitary body becomes very small preceding the hibernating season, but as spring comes on it gets larger until it reaches its greatest size at the end of spring.

The pituitary body has also an influence on the periodicity of the blood sugar content. The thyroid also has an influence in the amount of blood sugar that at any time may find its way in circulation, and an administration of the thyroid gland will increase the amount of blood sugar in the normal individual.

The pituitary body also has an effect upon the mobilization of sugar in the blood. Its various functions have been well proved by the best physiologists to serve such functions as these. It controls smooth muscle fibre. It will cause a contraction of smooth muscle fibre, probably a stimulation of the sympathetic nervous system. By virtue of that faculty it has to do with maintaining the tone and elasticity of the viscera, and all the hollow organs, so that they are enabled to maintain their relative positions in the abdomen. When the influence of the pituitary is waning or lacking, the viscera lose their tone, they lose their internal tension, they lose the rotundity they otherwise would have and become flaccid. They fall. There is an enteroptosis produced and all the symptoms referable to a lack of tone of smooth muscle fibre. But the small muscle walls of the bloodvessels likewise are effected and we have low tensioned pulse and low blood pressure. And as the result of those conditions we have the condition known as abdominal neurasthenia.

If that condition persists for any length of time, the viscera become more or less fixed in their new positions through adhesions, kinks, and so on, and hence require, in order to make that individual moderately normal, abdominal surgery. If, however, before these adhesions become formed the individual can be subjected to organotherapeutic measures, often the enteroptosis can be modified if not actually cured by the administration among other things of pituitary gland. The viscera then again become rotund, the smooth muscle walls become firm and elastic, and maintain their proper condition. That has been shown through successive x ray pictures.

The pituitary body also is said to have an influence on the production and circulation of the cerebrospinal fluid, so that by its effect, by its activity, the cells receive their proper nourishment and their detritus is removed. That means that a normal functional cerebral activity is produced by a normally acting pituitary body. The reverse of that can be shown through the experiments of Horsely, who removed the pituitary body in animals and showed that the slightest induced current applied to the cortex of the animal after the pituitary body was removed produced convulsive seizures which were not produced in anything like the degree with a larger current previous to the removal of the pituitary body.

Hence, Horsely's idea that deficiency of pituitary had some effect in the production of epilepsy. As a matter of fact, in cortical irritation, due to cerebrospinal lack of activity, the pituitary administration is efficient and the epilepsy can properly be checked. You will encounter an epileptic occasionally who will respond in a curative way to the administration of the pituitary gland.

The anterior part of the pituitary body is said to control sexual development and bodily growth. I told you before that under the influence of the thymus gland the body grew, but it need not grow proportionately. If you have an underdeveloped pituitary body and an overdeveloped thymus gland you will get a giant; but the giant will be disproportionate. The legs will be too long for the thorax, or vice versa. But if a properly acting pituitary body controls such thymic activity, you will have a giant who is well proportioned. And if you have an underdeveloped thymus gland, then you will get distortions of growth; especially are those distortions prominent when the epiphyses are already united. You get accretions of bone in breadth rather than in length, and we have as a result the structural abnormality which is known as acromegaly.

Now, acromegaly is not necessarily a disease. Acromegaly may be produced by a pituitary body becoming hyperactive in order to maintain blood pressure and tone, secondarily to a deficient adrenal gland. But when it does that in a compensatory way, it also by virtue of its increase in activity makes of that individual an acromegalic; and that goes on until compensation is produced and the individual goes on more or less normally. The acromegaly then ceases to progress. It doesn't go back to the original state. It remains acromegaly, but the individual is quite normal and well, nevertheless.

So don't believe, therefore, hereafter if you see an acromegalic that he necessarily needs treatment. He may not. It is very similar to that of a heart which is compensating for a valvular disturbance by means of its hypertrophy. That individual goes along very well and needs no treatment for his cardiac hypertrophy.

THE SUPRARENALS

The third series of glands, the suprarenals, is a group of two glands, but with many additions throughout the body of chromaffine tissue where it is available at an instant's notice. So that we have masses of tissue at the bifurcation of the larger vessels, such as the aorta or the carotids in the neck. So that any experiments, and such you have read of lately, that have been designed, for instance, to combat Cannon's idea of the influence of the adrenal glands upon emotion, fright, fear, rage, and the converse, especially those experiments of Stewart and Rogoff that were designed to disprove Cannon's point of view, were based upon a faulty conception of the condition. They were based upon the fact that the only producing agents of adrenalin were the two suprarenal glands, and they tied off one and ablated the other, and by that means they said they had prevented successfully any adrenalin from exuding into the tissues or blood vessels. That is faulty; hence their conclusions must fall.

Now, the adrenal bodies are composed of two parts—a medulla and a cortex. The medulla of the suprarenal gland is much smaller than the cortex, the proportion being about one to nine in the human being. There is nine times as much cortex as there is medulla. And interesting enough, in lower types of animals the cortex is smaller in proportion to the medulla than in the human being; and in human monsters where there has been no cerebral cortex at all there has also been found an absence of an adrenal cortex.

So that the juxtaposition of those two conditions leads us to suspect that there may be in the suprarenal cortex a chemical substance which by its presence inhibits the action of adrenaline, just as the cortex inhibits our animal activities through judgment; for the lower in the scale of animal we come to, the less is there inhibition of the animal vegetative instinct and the less suprarenal cortex. Nevertheless, Nature usually designs organs that have inhibiting influences on one another in such a way that they may be in close proximity.

A suprarenal individual, one in whom the adrenal glands are abnormally active shows by virtue of that activity certain traits of character that are rather interesting. Such person is choleric. He will have on the slightest provocation intensely high blood pressures. His sympathetic nervous system is constantly overstimulated. He has little inhibition and little judgment. That is, his judgment comes after the act that is prompted by the hyperadrenia has been accomplished, and the inhibition comes too late. Those individuals we all have met and seen.

There are certain types that we can differentiate with difficulty from those with hyperthyroid states. I have seen such cases without sign of tumor of the neck, without any pulsating of the vessels of the neck, with blood pressures of 180 systolic, with bulging eyes and with a rapid pulse with an increase in basal metabolism. Yet they don't lose weight as the hyperthyroid types do, and they do not have the other stigmata of hyperthyroidism, and they improve on treatment for hyperadrenia.

Those states must be sharply differentiated. In fact, it has been stated that exophthalmos is not an accentuation of hyperthyroidism at all, but is a disease *per se* with an involvement not only of the thyroid but of the parathyroids and of the suprarenal glands and others as well; and any treatment of the goitre must include treatment of all the other disturbed factors. I am sorry that limitation of space prevents me from a further presentation of the topic.

2 West Sixty-seventh Street.

The Diagnosis and Treatment of Hyperthyroidism*

By EMIL GOETSCH, M. D., F. A. C. S.,
Brooklyn, N. Y.,
Professor of Surgery, Long Island College Hospital.

It is my purpose to give a general condensed statement of the story of hyperthyroidism as I have come to look at it after detailed study of some six hundred cases of thyroid disease, in which the patients were subsequently operated upon, and then again studied with reference to the postoperative recovery and cure. I had the privilege of observing and operating in these cases while I was associated with Professor Cushing at the Peter Bent Brigham Hospital at Harvard, and later as a member of the surgical staff under Professor Halsted and Johns Hopkins Hospital. The recent cases I have treated at the Long Island College Hospital. In the time at my disposal it is quite impossible to consider in detail the work which has led up to the conceptions which I shall try to give you. Should I attempt detail I could spend the entire evening on any one relatively small field of thyroid pathology, symptomatology, diagnosis or treatment.

Hyperthyroidism can be looked upon in the broad sense, either from the point of view of pathological changes occurring in the thyroid gland or from the point of view of symptoms produced by an over amount of thyroid secretion elaborated by the gland as the result of physiological hyperfunction or from distinct pathological change. Accordingly, a patient may have a pathological thyroid gland and may be symptomatically hyperthyroid or not, depending upon whether or not at the moment of consideration there is a hypersecretion of thyroxin in the circulating fluids. In other words, there may be periods of remissions even though the pathology of the gland is constant, followed again by periods of hyperactivity with symptoms. We all know that it is for these reasons that the disease is such a variable one, symptomatically, and that it so frequently presents diagnostic difficulties. Thus we can say that hyperthyroidism exists only when there is present an overamount of thyroid secretion in the organism.

May I speak briefly of the different types of thyroid pathology which every one who sees any large number of patients with thyroid disturbances will meet. Thus, let us consider the simpler types of physiological hyperactivity associated with only very slight pathological changes in the gland. It is a question whether one should call these types true pathological changes or simply physiological hyperplasias. I have reference to the mild hypertrophy and hyperplasia with mild to moderate enlargement of the gland, which one sees so frequently in young girls at puberty or soon thereafter and up to and including the early twenties. This is the well known puberty hypertrophy and hyperplasia, and gives rise to mild hyperthyroidism. Many cases of this kind undergo spontaneous recovery and cure. Some may become chronic or may progress to greater degrees of toxicity, and then require medical or surgical treatment. In this type of thyroid gland there is an increase in the size of the cells of the acinus with a moderate amount of alveolar infolding, sometimes an increase and sometimes a slight decrease in the amount of colloid present.

Let us consider next that rather common and serious type of pathological hypertrophy and hyperplasia which one sees in the well known disease of exophthalmic goitre, known also as Graves's or Basedow's disease. You are familiar with this condition which, in its characteristic expression, is typified by the cardinal symptoms of exophthalmos, enlargement of the thyroid with thrills and bruits in the gland, tachycardia, tremor, loss of weight, and symptomatically by marked asthenia, nervousness, palpitation and dyspnea. In such a gland the mild hyperplasia which I have spoken of as occurring in the puberty hyperplastic gland now becomes truly a pathological hypertrophy and hyperplasia of extreme degree resulting in an enlargement of the gland in which the parenchyma or alveolar element of the gland shows the tall protoplasmic cells, a very marked infolding of the alveolar wall, and a diminished or an almost absent colloid in the acini. This disease sometimes responds to medical measures, but in the great majority of cases results after medical treatment are disappointing, and resort must be had to surgery.

---

*Read before the Medical Board of the Northern Westchester Hospital, Bedford Hills, N. Y., February 16, 1921.

Keeping in mind now these two types which I have just mentioned, namely, the puberty hyperplastic type and the exophthalmic goitre, and remembering that these are examples of hyperplasia occurring in the alveolar cells, namely, the cells bounding the acini, we may now speak of a more common and very different type of pathology which one encounters. I have reference to the benign growths which arise from multiplication and overgrowth of the cell rests familiarily known as the interstitial cells which occur in every normal gland, and which have the power of developing into discrete, circumscribed, encapsulated tumors, which may be single or multiple, varying in size from the head of a pin up to that of a grapefruit or larger, and which are known as fetal adenomata. This is the type of goitre which one sees commonly as a nodular irregular growth which is differentiated clearly from the exophthalmic gland, particularly in that exophthalmos, thrills and bruits are rarely found. There is a mild to moderate tachycardia, relatively slight loss of weight, and the symptoms are not so extreme. It is to this group that the great majority of cases of hyperthyroidism belong.

The common impression among many physicians is that a case cannot be hyperthyroidism unless there are present exophthalmos and other eye signs, and a rather marked tachycardia and nervousness. I want to emphasize the error of this conception for the reason that a great many instances of hyperthyroidism will be missed if one expects to find these signs. These adenomata in their growth are capable of enlarging to such an extent as to destroy absolutely the normal thyroid gland, and eventually it is even possible to have hyperthyroidism developed as a result of glandular atrophy resulting from the pressure produced by these large cystic adenomata. In their development they are at first solid tumors which later may undergo degeneration causing thus one of the well known common types of thyroid cysts in which the active adenoma tissue has been destroyed. You will see that it is possible for this degeneration to cause spontaneous cure of the adenoma and thus of the hyperthyroidism which it produces. The difficulty, however, is that the adenoma is so rarely single. There may be one large adenomatous cyst on one side of the neck and unless the surgeon is very careful to explore the opposite lobe he may readily overlook small adenomata which are the principal cause of the hyperthyroidism of which the patient complains. Should he remove simply the cystic enlargement he will, of course, fail to cure the hyperthyroidism for which the patient consults him. I was the first to show in a paper published in the *Johns Hopkins Hospital Bulletin* in 1916, (1) from the cellular evidence of activity, that the adenomata were of themselves responsible for hyperthyroidism, and that in order to effect a cure all the offending tissue in the form of adenomata must be removed in toto in order to cure the hyperthyroidism and to prevent recurrence. In this type of goitre medical measures fail as do also such measures as x ray or radium. It is distinctly in my opinion a surgical condition which does not yield until a gland resection is done leaving whatever of the normal thyroid gland there remains. I have never seen symptoms of hyperthyroidism appear no matter how radically I resect because there are always to be found remains of the normal gland either at the poles or posteriorly in connection with the posterior part of the capsule.

Let me mention now a further type of pathological change which I have described in a recent number of *Endocrinology* and which I have termed diffuse adenomatosis (2) of the thyroid. Here similarly the new tissue characteristic of this condition develops from the interstitial cells of the thyroid. The striking difference from adenoma consists in the fact that instead of isolated islands of interstitial cells developing here and there in the gland, the entire interstitial element otherwise known as the fetal cells of Cohnheim, simultaneously overgrow, causing thus the atrophy of the acinar or alveolar cells in the gland. This results in a very striking picture which is characterized by a structureless cellular overgrowth composed of great numbers of interstitial cells with an associated atrophy of the parenchyma. You will note that this picture is the precise opposite of exophthalmic goitre in which there is a tremendous hyperplasia of the acinar epithelium, and an almost complete absence of the interstitial cells. I have termed this condition diffuse adenomatosis because of the fact that the interstitial tissue is diffusely scattered throughout the gland instead of being encapsulated.

If you will keep in mind these four types of pathological changes in the thyroid gland, namely, first, puberty hyperplasia, second, exophthalmic goitre (the two types of alveolar hyperplasia), third, the adenoma, and fourth, diffuse adenomatosis, (the latter two arising from the interstitial cells), you will have a conception of the thyroid pathological changes which compose by all odds the great bulk of thyroid disturbances. I have left out of this consideration the simple colloid goitre which also occurs in young folks but which rarely produces symptoms. This condition responds rather well to small doses of iodine and is unaccompanied by symptoms. It therefore gives little trouble either to the medical man or to the surgeon. Occasionally this simple colloid goitre grows very large and then we have the familiar thyroid enlargement without symptoms. This type becomes surgical because of pressure upon the trachea and necessitates removal for mechanical reasons and not for reasons of hyperthyroidism. You will note that I have not mentioned the malignant tumors which are rare, namely, carcinoma and sarcoma, nor have I mentioned the primary acute infectious conditions nor the chronic infections, such as tuberculosis or lues, all of which are extremely uncommon, so uncommon that when encountered you may regard them as a curiosity rather than a common finding.

Thus far I have tried to give you an outline of the common forms of goitre and I shall now direct your attention to a consideration of the symptoms produced and thus to a clinical conception of hyperthyroidism. Let me, therefore, take you back again to the pathological types and I shall try to give you a symptomatic picture of these types in turn. Let us take up first the puberty hyperplastic type. In this condition there is usually a mild to moderate hyperthyroidism which expresses itself in increased nervousness and irritability, a high strung temperament, emotionalism with oftentimes depression and crying spells, some tachycardia and palpitation, shortness of breath on exertion, weakness and loss of weight, vasomotor changes with sensations of heat and cold, cold, clammy hands and feet, and a slight to moderate enlargement of the thyroid gland, which, however, rarely ever exhibits thrills or bruits. The eye signs are usually negative, but occasionally there is a suggestive Von Graefe. The disease may occur at puberty and may continue over a period of ten to fifteen years. Variability of symptoms is also a common finding. A short vacation, a change of environment, and rest, may be sufficient to render the patient really quite well, the difficulty being that as soon as the old associations and environment are again reestablished the disease may relapse. Occasionally some good has come from iodine therapy in these instances, but then again it fails utterly and resort must be had to other measures.

I would caution you against the impression that because the enlargement of the gland with its associated symptomatology occurs in a young girl it is relatively harmless, and that the patient may outgrow it or that some other unexpected improvement may occur. In other words, delay in cases of this kind is often dangerous and harmful. The harmful effects are not only those of an absolute damage to the patient's constitution, but also to my mind those of a social nature since the onset of the trouble occurs in the early formative period of the young girl and may interfere very seriously with her education, for example, or with her health generally, and with normal social contacts.. I have seen many instances of expectant treatment where it has been necessary to take a young girl out of school or college because she was too nervous or too fatigued to continue her studies. I have seen patients taken away from their normal surroundings, from their homes and friends and sent into the country or to resorts for considerable periods of time to be denied, furthermore, both at home and elsewhere the benefits of physical exercise and to fail absolutely in preparation for marriage, motherhood, or even for a selfsupporting life in case such is necessary, as it so frequently is.

When one considers the disease from this viewpoint we see how serious the condition really may be, occurring as it does in the formative period of the patient's life. At the age of twenty-five to thirty the patient realizes what the condition has meant even though it be not outspoken or symptomatically very serious, and then she come finally for the correction of the condition to surgical measures or has already progressed into a more serious form of exophthalmic goitre. I feel that when a trial at medical and hygienic measures for a period of three to six months has failed, resort should be had to surgery in order to give the patient the benefits which come from resection of the thyroid and to prevent this long period of disability which one may otherwise see. The point I wish to emphasize is that because the condition occurs in a young girl she should not, therefore, be passed over lightly and be denied the benefits of thyroid resection. I would also emphasize that one should not operate in these cases unless really necessary, for we know that even without treatment a number of them undergo spontaneous cure. I therefore advise an open mind in the treatment of these conditions and when one measure fails try another but do not postpone indefinitely.

Let us consider now the symptomatology as we find it in an extreme type of hyperthyroidism, namely, in exophthalmic goitre. Here the patient is suffering primarily from the results of an overamount of thyroxin, the specific secretion of the thyroid gland which, by the way, has now been isolated in crystalline form by Kendall of the Mayo Clinic and which, as you well know, is an extremely toxic body comparable to aconite in its potency, one four hundredth of a grain being capable of producing symptoms in an animal and even in man. The principal signs in this condition are exophthalmos and a large thyroid gland which is extremely vascular and shows thrills and bruits over the thyroid arteries and the gland. These are the striking features of exophthalmic goitre as against other forms, namely, puberty hypertrophy, adenoma, and diffuse adenomatosis. Furthermore, there is tachycardia, rather marked loss of weight, tremor and perspiration together with vasomotor instability.

A symptom which I wish to emphasize is weakness. This is so common, so early and marked, that I have come to regard it of more importance even than nervousness, for I have had patients in the extreme stage of the disease who have practically denied being nervous, but who have been subject to great fatigue and inability to do things. Furthermore, there is palpitation, dyspnea, emotionalism, tremor, throbbing and increased perspiration. The treatment consists of complete rest, relief from stress and anxieties, supporting treatment, bromides, and occasionally small doses of iodide, but this latter is very uncertain, at times doing positive harm. If these measures fail after a reasonable time, then I think that the benefits of surgical operation should not be denied the patient, for as far as the recoveries from operations of this kind are concerned the results are really brilliant, and in experienced hands the operation is even safer than the operation of appendectomy used to be. In the serious cases I do very commonly preliminary ligations of the thyroid arteries waiting then ten days to three weeks before one or both lobes are resected. The operation in general consists of doing whatever is consistent with the condition of the patient. If the toxicity is of moderate degree preliminary ligation is of course unnecessary. However, in order to be safe I take no unwarranted risks. I feel that the stage operations are indicated, for as I have frequently said, I would rather have a live patient after two or three operations than a dead patient after one operation. Single lobectomy does not give such rapid recoveries but is safer, whereas one can expect marked improvement to cures within three to six months after double resection. After single resection it may require a year or two before relief from symptoms is obtained. However, after a period of three to five years it seems that results from a single lobectomy are as good as those from a double lobectomy. However, to gain early and striking improvement I have done double resection in those cases in which it appears to be safe. The factors of safety I shall speak of later.

Coming now to the pathological overgrowths arising from the interstitial tissue and leaving aside for the moment the hyperplasias just mentioned, we may take up that group of goitres of an adenomatous nature, a group which forms by all odds the greatest percentage of cases of goitres producing hyperthyroidism. As mentioned the peculiar feature of this type of goitre is the presence of benign encapsulated new growths in the gland arising from the fetal cell rests, and occurring singly or in groups and beginning as early as puberty and often progressing throughout the life of the patient. The normal thyroid tissue is caused to atrophy by the pressure of these growths and may be finally completely destroyed. They may be so small at the beginning as to be overlooked since they are neither visible nor palpable externally, but they may even at this early stage produce symptoms of hyperthyroidism the origin of which is often obscure unless one recognizes this fact. I have frequently uncovered numerous small adenomata in the thyroid gland in cases which I thought were chronic hyperthyroidism and which gave a typical symptomatology and reacted positively to my epinephrine test which I shall discuss briefly in a moment. Until this fact was recognized these cases were totally obscure, the diagnosis was difficult, and the patients went from physician to physician in search of relief. The patient with adenoma is not in any sense to be confused with one suffering from exophthalmic goitre, and I may mention a few of the striking differences presented on examination and in symptomatology.

The patient with adenoma very often has a long chronic complaint oftentimes dating back to puberty, whereas before that time the patient was quite well. The syndrome is that of chronic fatigue, asthenia, labile irregular pulse easily stimulated by emotion. Depressions are very common indeed and also fears of going insane. These patients will often talk of suicide. There is a mild to moderate loss of weight not so extreme as in exophthalmic goitre; vasomotor instability is common; there is often a slight elevation of temperature, tremor, and a further striking feature is that tachycardia may or may not be present. The features distinguishing this condition from exophthalmic goitre are primarily that there are no eye signs nor exophthalmos, and the gland is not vascular as in exophthalmic goitre, wherefore, there are no thrills or bruits, and the other circulatory signs like throbbing of the large vessels and of the precordium are absent. The whole symptomatology is likely to be a chronic one, as against a more acute one in exophthalmic goitre. Whenever one finds a definite nodule or nodules in the thyroid he can be perfectly sure that he is dealing with adenoma, and that should the symptomatology which I have mentioned be obtained, then it is most likely dependent upon this thyroid pathology, since in no other type of goitre that I am aware of, does one find these characteristic, circumscribed, hard, often very tender nodules, except in adenoma. The exophthalmic gland is more uniformly enlarged and has an elastic, slightly granular feel. The colloid goitre and the puberty hyperplastic gland are more uniformly enlarged, have an elastic feel and a rather smooth surface contour. Since these adenomata, as I have shown, are actively secreting structures, since the toxin which they elaborate is the same or very similar to the thyroxin elaborated by the normal gland, and since they are unaffected by any of the ordinary measures used in the treatment of goitre, I feel that I am safe in saying that whenever an adenomatous gland is found, even though the adenomata be small, and when the characteristic symptomatology is present the condition is a surgical one, and that one cannot expect improvement or cure until all of the adenomata or the adenomatous tissue are completely excised. The results in this group of cases are really brilliant because in adenoma as against the conditions in exophthalmic goitre, all of the offending tissue can be removed and, therefore, cure can be expected, whereas we all know one cannot remove all of the exophthalmic gland with safety. As I stated before there is always some normal thyroid tissue remaining after adenoma excision although it may be small in amount, and I believe that this small amount of thyroid becomes active and can meet all the needs of the normal metabolism of the patient.

Lastly, let me say a few words about a very interesting condition which has come to my attention in the last few years, which I believe is a new clinicopathological syndrome in thyroid disease, and to which I have given the name of diffuse adenomatosis. In this condition there is a very marked hypertrophy and hyperplasia of the interstitial cells of the thyroid with an atrophy of the normal parenchyma. The gland is either not enlarged at all or only slightly and, therefore, frequently escapes notice. Thrills, bruits and nodules are not made out; hence the gland is frequently overlooked. The characteristic syndrome of loss of weight, asthenia, nervousness, labile pulse, and slight elevation of temperature, frequently brings these people to the physician who suspects tuberculosis. I have had a number of patients belonging to this group who have stayed for months to years at tuberculosis sanatoria under the impression that their symptomatology was due to this serious condition, and who have gotten thereby little or no improvement. There are no eye signs here to help one, but there is obtainable a chronic symptomatology as I have mentioned together with a positive epinephrine test, which latter fact has brought them to my attention. I have operated upon a series of fifteen to twenty of these patients, and have been very much encouraged indeed by the splendid results which in most cases have followed the thyroid resection when all other measures even over long periods of time had failed.

I have discussed the pathology and symptomatology of these different groups of thyroid disease because diagnosis naturally rests so largely upon them. There are, however, some other diagnostic aids which I have not mentioned and which are in the nature of clinical tests. I refer to the metabolic rate determinations and to my own epinephrine test for hyperthyroidism. It has become quite well established now that the active principle of the thyroid, namely thyroxin, is the principal regulator of metabolism in the body. When thyroxin is present in increased amounts it increases the metabolic activities of the cells of the body, and when in deficient amounts the metabolic processes are inhibited. With an increase in the metabolism there is naturally an increase also of the oxygen consumption and the carbon dioxide output of the individual and in proportion to the increase in the metabolism. We feel, therefore, that by the determination of this gaseous exchange a considerable light is thrown upon the degree of thyroid overfunction, and in general it has been established that the rate runs quite parallel though not absolutely so to the amount of thyroid overactivity. When properly carried out the metabolic test is a valuable aid in the interpretation of any thyroid state. I wish to caution, however, against results obtained unless the method is most carefully controlled and most carefully carried out, otherwise faulty conclusions will be drawn. It requires an expert to carry it out and is accompanied by some annoyance to the patient since she must be without food for twelve to fourteen hours before the test is done, she must be absolutely quiet in bed for several hours before and during the test. Some rather noticeable exceptions have been found where the metabolic rate did not seem to run parallel to the clinical degree of toxicity, and again there are certain conditions which give increase of metabolic rate, such as most fevers, leucemia, diabetes, acromegaly, arteriosclerosis, nephritis, and some others. However, it is of great value as a diagnostic aid in the study of thyroid disease.

My epinephrine test depends upon the fact that in an organism in which there is an overamount of thyroid secretion present the sympathetic nervous system is sensitized to the action of epinephrine, and I have found after a study of over six hundred cases of thyroid disease that in clinical states of hyperthyroidism the patient reacts positively to the subcutaneous injection of 0.5 c.c. of one in one thousand adrenalin chloride solution, a dose to which a normal individual does not react. A positive reaction consists in an increase of over ten points in pulse or blood pressure or both, and an increase in the respirations, and an exacerbation of the clinical signs and symptoms which the patient presents, namely, nervousness, throbbing, asthenia, hot and cold sensations, tremor, vasomotor disturbances, and oftentimes an increased emotionalism. After an hour to an hour and a half after the injection of the epinephrine the status of the patient is usually quite normal again. The degree of reaction is in proportion to the degree of toxicity present. I have found that all cases of hyperthyroidism react to the drug. If the reaction is negative and we are considering, for example, a borderline case we know absolutely that the case is not one of hyperthyroidism. There are a few types of borderline cases such as certain neuroses, asthma and neurocirculatory asthenia in which an atypical response is obtained. I have found no difficulty with this type of reaction which is usually brief and does not show the characteristic hyperthyroidism response obtained in true types of hyperthyroidism. A positive test has helped me in determining whether the case is truly hyperthyroid and whether thyroidectomy should be done, or whether continuance of medical measures should be advised, and it is this positive test which has helped me so much in the fourth group, which I have termed diffuse adenomatosis and which before had been so baffling. I have advised operation also in the adenoma group in which the adenomata were too small to be seen or felt before operation, and to my delight I have been able to uncover at operation a small adenomatous gland, and have had splendid results from resection as has been shown in the postoperative study of these cases. There is a very noticeable gain in weight from ten to forty pounds with a complete or very nearly complete relief from the distressing symptoms which the patient showed for so long a time before operation.

The epinephrine test has some very distinct advantages over the metabolic determinations, namely, in the following: It can be carried out by any one familiar with the use of the blood pressure apparatus and the hypodermic syringe. I have had fourth year medical students frequently carry out these tests very efficiently. It is inexpensive, is not subject to technical errors to which the metabolism determinations are, and to my mind it has also the great advantage of being able to show very mild states of hyperthyroidism or the disease of hyperthyroidism during one of its remissions, at which times the metabolic rate determinations may be within normal limits, and thus fail to reveal the fundamental cause for the patient's complaint. In both instances, however, great aid has been given to the more modern methods of detecting hyperthyroidism and not only that but since both give us an idea of the degree of toxicity present we know something of the patient's ability to withstand surgical operation.. Thus, when the metabolic rate is high or when the epinephrine test is unusually positive we are frequently lead to do preliminary ligations in exophthalmic goitre with consequent lobectomies which then are safe, whereas, should a lobectomy be done at once a fatal outcome from precipitation of hyperthyroidism after operation may result. Again, the progress of a case can be followed for, with improvement the metabolic rate goes down and approaches the normal and similarly there is a gradual disappearance of the hypersensitiveness to adrenalin. After a single lobectomy operation and when the epinephrine sensitiveness is still present, a second operation on the second lobe is probably necessary. Similarly in the treatment, for example, of hypothyroid states the feeding of thyroid extract is guided; the gland is given up to the amount necessary to obtain a normal metabolic rate or a just beginning sensitiveness to epinephrine. Before gland feeding in the hypothyroid state the metabolic rate is below normal and the tolerance to adrenalin is oftentimes double that seen in a normal person.

The treatment of hyperthyroidism I have already outlined in connection with the discussion of the individual groups of goitre and I may summarize briefly by saying that in the simple colloid goitre iodine therapy is frequently followed by very brilliant results, namely, in the reduction of the size of the gland. These are instances in which there are no symptoms of hyperthyroidism and in which there is simply an enlargement of the gland which may be annoying or which may produce mechanical pressure upon the trachea or large vessels of the neck.

In puberty hyperplasia a period of rest and medical measures together with small amounts of iodine are sometimes sufficient to obtain relief. Many cases may also obtain relief or spontaneous cure without any treatment whatever. I would, however, feel that when these measures fail one should not procrastinate too long for the relief from a thyroid resection is very prompt and lasting, and the operation in these instances is very safe indeed.

The exophthalmic goitre cases should have similar advantage of medical treatment, but here again when medical measures have not produced the desired improvement in three to six months' time surgery often gives splendid results, and if operation is decided upon it should be done before permanent damage has been done to the heart, kidneys, and nervous system for otherwise even though the hyperthyroidism is relieved one cannot hope to restore the permanently damaged tissues. X ray and radium seem to give some relief but in the hands of those who have treated series of cases I have failed to see results in any way comparable to those obtained by surgical measures. The treatment is carried sometimes over two to three years' time and during this interval serious damage can readily be done.

The adenoma operation is very safe indeed. I have never lost a patient belonging to this group, the results are immediate almost, and recurrence practically never occurs if operation with the removal of all the adenomatous tissue is carried out.

In diffuse adenomatosis double resection with reduction of the gland tissue to one fourth or even one fifth possibly of its amount is necessary to obtain relief. One need not fear hypothyroidism if the gland is reduced even to this amount. On the other hand, if only one side is resected the benefit is only slight. I have omitted the detailed technical account of the operation in the different types of goitre, for this would lead me too far afield in a general survey of thyroid disease as I attempted to give it to you this evening.

REFERENCES.

1. Goetsch, E.: Functional Significance of Mitochondria in Toxic Thyroid Adenomata, *Bulletin Johns Hopkins Hospital,* Baltimore, 1916, xxvii, No. 303, 129-133, 2 pl.

2. Goetsch, E.: Studies on Disorders of the Thyroid Gland. II. Further Experiences with the Epinephrin Hypersensitiveness Test with Especial Reference to Diffuse Adenomatosis of the Thyroid Gland, *Endocrinology,* 1920, iv, No. 3, 389-402.

Hypothyroidism and Tabes Dorsalis

A Preliminary Statement

By SMITH ELY JELLIFFE, M. D., Ph. D.,
New York.

Some time ago I was consulted by a patient who came to me with the report that she had seen a number of physicians. She had a collection of written statements, all of which claimed she had beginning tabes dorsalis. These were accompanied with shorter or longer summaries of the findings which showed shooting pains, coming and going, loss of knee and ankle jerks, slight incoordination of the limbs, slight sluggishness of the pupils, difficulty in thinking and marked asthenia.

My own examination confirmed these findings, but the Wassermann blood reaction and the study of the cerebrospinal fluid was negative as to pathological cell count, serum globulin, or serum reaction. Colloidal gold tests were not then elaborated.

Closer examination led me to believe the diagnosis needed revision and that I had to deal with a submyxedematous state. Thyroid treatment made a great change in the patient's condition. The neuralgic pains disappeared, knee jerks returned, the sluggish pupillary reactions vanished and the mental and physical fatigue states cleared up.

Since then I have seen a number of similar cases and have thought to make this short communication since some of the patients whom I have seen recently had consulted neurological confrères concerning whose abilities I have the highest regard, and who had made diagnoses of incipient tabes dorsalis, and had either begun a salvarsan therapy or were about to do so. This communication is not meant as a criticism of these confrères, my own mistakes are too numerous and all too enlightening of personal and general limitations. Rather the purpose is to emphasize the need for a closer scrutiny of a certain type of case since a differental diagnosis may be at times very difficult.

Furthermore, another interesting phase of this problem has come to my direct notice and professional observation. I have been shown, with considerable air of triumph, the cure of "tabes dorsalis," by various types of practitioners, Christian Science, chiropractors, osteopaths, and mental healers. As some of the patients had reports making the diagnosis tabes dorsalis from regular physicians and even neurologists, I might have been considerably put to to show the real merit of the situation were it not that in two of the patients who were directly brought as confirmation of the cures were of this submyxedematous pseudotabetic type. Others have been banal alcoholic neuritis cases.

Whereas our notions concerning sensorimotor neuroglia have had a longer period of fixity than those in other fields, especially in vegetative and symbolic neurological domains, yet science "do move" and even our most prized diagnostic entities are being chipped and refashioned, and now and then suffer severe disfigurement. Entities, after all, are so comfortable. They are like having one's horses safely put away in the barn for the night—we can then comfortably go to sleep. So when our "disease labels" get fairly secure, we don't have to worry. But life after all is constantly slipping through our fingers, and disease, which is a special kind of interaction going on between the organism and its environment is even more elusive, and our "diagnostic labels" are constantly being shifted to meet the new exigencies of wider and deeper perspectives.

The development of "tabes dorsalis" as a group diagnostic label is one of considerable antiquity. Elsewhere (1) I have traced its interesting history and shown that it has meant many things but it has become more or less stable since the work of Duchenne of Boulogne, of Romberg and of recent syphilographers. It is recognized as connoting a group of symptoms due to implication of certain posterior root anatomical structures resulting from the effects of infection from Treponema pallida, and other complex factors. It is not necessary to review these symptoms here—nor the complicated factors entering into the pathology. This has already been done in encyclopedic proportions.

Certain of the symptoms, however, are such as have occurred in the mild hypothyroid states under observation and may be discussed to advantage more in detail. These have been neuralgic pains, diminution or loss of the knee jerks, irregular pupillary reactions, Argyll Robertson pupil, visceral crises, and modified mental states.

As is well known the *Quiz Compend* kind of neurology described tabes dorsalis as a disease usually beginning with neuralgic pains in the extremities, later followed by loss of the knee jerks and ankle jerks, with Romberg swaying or gait alterations, gastric or other types of crises, altered pupillary reflexes, and at times an involved mentality.

It is the purpose of this short note to indicate that mild grades of this syndrome in part or in whole can occur in certain forms of submyxedema, and that such patients, unless the Wassermann and spinal fluid tests are carefully carried out, may be incorrectly treated. Still further I would like to point out that even assuming that a negative blood and cerebrospinal fluid may exist with a definite syphilitic tabes dorsalis, than which there is no other, there still are diagnostic points of value in a syndrome of thyroid origin by which one may be assisted to make a differentiation, unaided by the serocytological findings.

Abbreviated summaries of two of these histories may be given:

CASE I. This patient was seen in November, 1913, for the first time. She was then fifty-four years of age, and had married twice; the first time at nineteen years of age. Her first husband died of tuberculosis, and his long illness caused much economic worry. She had two children by this husband, and four by the second, whom she married when she was twenty-seven years of age. Three children survive. She had to support herself and her two children after the death of the first husband, and became much run down. After her second marriage her economic situation was improved, but she had always been nervous since the loss of her first husband, with irregular ups and downs. She had a general neurotic nature, with no alcoholic history. The menopause occurred at forty-five, since which her nervous condition had been exaggerated.

For about three years she had had neuralgiclike pains, chiefly in the right arm from the elbows down. These would be very severe, paroxysmallike, lasting from ten to twenty minutes and then disappear. Sometimes she had five or six attacks a day; then she would be free for a week or two and have a recurrence of the shooting pains. Occasionally the ankle and big toe of the lower extremities would have these sharp twitchings of pain.

Two years ago she first had severe attacks of pain in the abdomen with nausea and violent vomiting. These had been accompanied by diarrhea with much mucus discharge. She had three attacks of this nature in the two years. She complained of no other symptoms except great fatigue, marked depression and much insomnia.

Examination, in brief, showed no paralyis. Markedly sluggish pupil reaction, the left slower than the right, L. five mm., R. two mm. There was a diminution in the patellar reflexes and also of the achilles jerk. Hypotonia was definite; no Romberg: no bladder disturbances. Some tenderness of the nerve trunks was present. She was "logey" and heavy mentally.

The skin was thick, dry, and scaly. The hair was scanty and falling out, the mouth dry, the tongue thickened, ridged by the teeth. The eyebrows were scanty, nails fragile, arthritic tenderness. She was constipated. As stated, the diagnosis of tabes dorsalis had been made on the basis of the altered knee jerks, slow pupillary reaction, pains, hypotonia and gastric crises. The blood Wassermann was negative. Cerebrospinal fluid in one to two cells serologically negative.

A diagnosis of submyxedema was made. The cause of the thyroid deficiency was attributed to constant economic distress, family anxieties, and a definite Jocasta like situation with one of her sons. An appraisal of these factors, from the viewpoint of interrelationship between mental and metabolic activities was made a part of a communication on Hypothyroid and Hyperthyroid States and Underlying Emotional Disturbance to the American Neurological Association in 1915.

Thyroid therapy for a time was of much service. The pains disappeared, her fatigue was lightened, her interest in life was more evident through 1914. The constipation was markedly improved under two grains of thyroid a day. The skin became less puffy, less waxy and the anemia improved. December 1913, January 1914, February 1914, March 1914: saw her once a month, and she showed steady improvement. The knee jerks were more active, the pupillary reactions more marked, irregularity less, both myotic. The skin thickness still persisted.

She then ceased to come. I saw her next in October, 1919, six years later; she reported that she was better; for a time she stopped the thyroid. Of late she had had more headaches, was excitable and highly irritable. Arthritic pains were present but there was no constipation. She had had, in 1918, one severe attack of vomiting—attributed to oysters—and two others since.

The physical examination showed she had regressed to much the same condition. The patellar reflexes were slight but present—the achilles reflex, the fatigue, and memory states as before. She improved under thyroid therapy again, but by November, 1919, had forgotten to take it and wrote a despairing letter. I received a letter in December, 1920, which indicated definite improvement.

Case II. This patient, a woman of thirty-six, was seen in 1917. She also came with a diagnosis of tabes dorsalis. She had a very complicated and full history from the time of her youth, which was made difficult by a religious fanatical father, followed by a seduction by a physician at sixteen. She then went on the stage, as a chorus girl, where she remained for two years. She then had a Neisserian infection, later, at twenty, severe scarlet fever with arthritis, and later a salpingitis required a complete hysterectomy in 1907. She was very intelligent and capable, she made good and had held for some years a very responsible position as private secretary with large corporate interests, and when I saw her, for the present difficulty, she was married, a woman of social position, means, accomplishment and charm, in spite of the adverse beginnings.

She had consulted her physician who, on reference to a local specialist, had told her she probably had a beginning of locomotor ataxia. She later came to New York on a motor trip which was hurried and only permitted a cursory examination.

The salient features of her early social history were as noted. Save that in 1900 she had had a "big fever sore" on her lip which had lasted several weeks. The doctor burned it and there was a hole for two to three weeks. There were no eruptions of any form following this. In 1904 she had an ulcer on the left thigh.

The present situation began about 1916. She had feelings of great uneasiness: shooting pains in the legs and arms: at times a band of anesthesia unevenly distributed about the waist. Previously and about one to two years after the hysterectomy, she occasionally had severe attacks of projectile vomiting, lasting two days. At times she would have two of these in a year. The pain and cramps were terrific; she had not had one for over a year, but while in New York had a very severe attack of diarrhea with cramps and pains which she said were a sort of incomplete or modified stomach attack. She was always cold and goosefleshy; had frequent and severe colds; was nervous and fidgety; shook all over; was usually constipated, save when the periodic diarrheas took place. In June, 1917, she had a circular zoster attack with presently represented creepy, crawly areas. Had been a young woman of much pep, but her snap was all gone. She showed the typical hypothyroid eyebrow thinning.

Examination at this time showed a well built woman with moderate adiposity. The skin very hard and cold and marblelike. Goose fleshing was evident, the pilomotor reflexes irregularly hyperactive. Red demographia was present and of moderate intensity.

Cranial nerves. Left pupil was larger than right, reacting sluggishly to light and accommodation. Aschner reflexes negative, Möbius positive. No paralyses. Diminished knee jerks. Romberg some swaying, negative nerve trunk tenderness, no ataxias.

Laboratory findings not greatly variant. Two per cent. eosinophiles, blood pressure 155-105 systolic-diastolic; negative blood Wassermann; faint trace of albumin. Spinal fluid seven cells, no glucose, no fixation.

I told her I thought it doubtful if tabes was present but advised careful revision under the local neurologist's care of all of the tests since on one occasion he had a report of plus blood Wassermann from his local serologist.

Then I advised a course of one hundred one grain tablets of desiccated thyroid with cooked thyroid once or twice a week. I wrote to the local neurologist regarding my idea that a dysthyroid syndrome was possible (after hysterectomy, overcompensatory gonadal thyroid activity with thyroid exhaustion) (she had had some slight swelling of the thyroid after the hysterectomy) and suggested a careful revision of the material since she showed unmistakable dysthyroid vagotonic stigmata.

The war activities withdrew all medical supervision and as the patient was a long way off in Western Canada it was difficult to trace further the situation from a technical point of view. She grew better, intermittently. At one time in 1919, following a continuous use of thyroid, the puffiness in the neck returned, her breathing was affected, headaches increased; she became jumpy. These symptoms disappeared after discontinuance of the drug.

The last reports in 1920 were that she has had no gastric attacks, no diarrheas, no constipation. The arthritis is better, the pains are gone, her fatigue is better, though she has not the endurance of former days. Long letters indicate also definite unconscious psychogenic factors of difficult adjustment with reference to some orgasmal retardation and the self denial of child bearing. I have no revision of the neurological status to report.

DISCUSSION.

There is little need for extended discussion. Concerning the signs of minor hypothyroid disturbance, Levi and Rothchild have summarized them with great precision and for the main it is well to recognize that scanty hair distribution, frilosity, arthritic, neuritic, and trophic disturbances may arise on the basis of dysthyroid function. The patients illustrate that there is a certain trend in a submyxedema which could be confused with a tabetic syndrome.

One or two points may be touched upon which are of less well recognized significance, and as certain of these features run across the typical tabetic trail they may be commented upon, leaving for a future time a more extended and elaborate discussion. A careful survey of the titles of the *Index Medicus*, Surgeon General's Library, and the 150,000 titles of the *Revue Neurologique Fiches Bibliographique,* (see special *Neurological Index* prepared by author, New York Academy of Medicine) has nŏt revealed any similar juxtaposition of ideas although it would appear selfevident. References to related studies here suggested have been omitted as I hope to return to this problem in a more extended and detailed analysis.

It would appear that the dysthyroid condition can bring about a typical vagotonic state which can give rise to the characteristic crises of a similar vagotonic state which lies behind the crises of tabes. Eppinger has already suggested the explanation of the crises of tabes in a vagotonic hypothesis and hence the thought may extend these ideas in two directions. The one has already been suggested, the other is that in the tabetic pathology the vegetative sympathetic pathways becoming more seriously involved in certain patients permits the vagotonic reaction, and that it is possible that concomitant dysthyroid pathology is a factor in the constellation of the constitutional pathology to aid in the production of crises of many kinds. Hence it may be read that the syphilitic infiltration. process in the incoming vegetative fibre pathways, plus the dysthyroid modifications of the effector pathways, plus other factors, (I myself have insisted that psychogenic factors may be added in the constellation, in some instances bringing about the dysthyroid function) results in the crippling crises of tabes.

I am also disposed to analyze the tabetic arthropathies along similar lines of a "constellation pathology."

The pupillary reflex pathway modifications are probably much more complex since the phyletic complications of the evolution of the light receptor mechanism of the eye are as yet far beyond our ability to unite into a satisfactory generalisation. The vegetative reflex arcs of the intestinal and bony integrations, though still far from being completely resolved yet are probably much simpler in their phyletic history and hence nearer being satisfactorily explained by our present day intellectual symbols.

REFERENCES.

1. Jelliffe and White: *Diseases of the Nervous System,* Third Edition, New York and Philadelphia, 1919.

64 West Fifty-sixth Street.

The Relationship of Psychopathology to the Endocrines

By GREGORY STRAGNELL, M. D.,
New York.

Staunch defenders of the more static forms of medicine have frequently accused the modern psychopathologists, or analysts, of attributing all of the ills of man to psychic causes; of trying to make an adjustment for the patient on a purely psychic basis; of neglecting the physical phases of man's existence. Such an accusation is worthy of attention. Does it conform with the facts or is it the result of a defensive mechanism thrown out as a protection in order to obviate a thorough investigation?

In this paper I shall show how the modern psychopathologist takes cognizance of the endocrine status of the patient and how he utilizes his findings in his analysis of a case. I take only this one branch of medicine to illustrate my case for it is not only the various endocrine disorders which must be considered but every physical difficulty must be traced to its source whether it be physical of psychical in origin and then every known method used in order to make it possible for the patient to adjust the realities of life; care being taken that the adjustment is made on a basis satisfactory to the wellbeing of the patient with due consideration of his obligations first to himself, then to those dependent upon him, and finally to the community of which he is an active worker.

Frequently it is found that although a given physical ailment results from a psychic cause, yet the damage done has been so great that physical measures, various surgical or medical procedures must be employed in order to alleviate the condition. It is needless to reiterate the common example of the effect produced by the various emotional states upon the viscera, the tensions, the resistance, and general state of health. The works of Cannon, the excellent observations of William James and of Darwin leave no doubt on this score.

THE GONADS.

In the gonadal glands we find two types of alteration: The changes primary in the glands or in portions of the glands controlling certain functions; changes due to a physiological process to compensate for alterations in other endocrine structures such as the adrenals.

In primary gonadal changes concomitant markings are usually present in the teeth, the lateral incisors having characteristic markings which connote changes in structure, in position, or in altered function of the gonadal group. The lateral incisors may be congenitally absent; may be twisted, displaced forwards or backwards or they may not be erupted. This relationship of the gonads to the lateral incisors is a complex one and seems to be related embryologically. Some observers have worked the markings out to a rather definite degree and state that an undescended testicle and an absent lateral incisor of the opposite side are usually found together. The validity of these generalizations may be doubted but enough evidence has been submitted to show a close relationship and when malposition or absence of the lateral incisors is present we may be sure that there is some inferiority in the gonadal chain. This inferiority will lead to one or both of two types of compensation. On the one hand we frequently find an endocrine compensation, both in the male and the female. In the male the pituitary attempts to take over the duties of the inefficient or absent gonadal group, as is evidenced by the typical eunuch, and in so doing will bring out certain additional characteristics, physical as well as psychological, which stamp the subject as a distinct type.

A specimen of this type will usually be tall, at times well built, show many of the characteristics of the true pituitary type, extreme fondness for music and all things rhythmic, such as dancing, a craving for sweets, for order; he will be extremely punctual, exhibit a keen interest in machinery, especially flying and fast automobiling. In addition there will be found a sexual inferiority which will be manifested by a great variety of symbolic substitutes. The man will have a powerful tendency to remain in a fixed relationship to the mother. This type of fixation results in a profound conflict with many ramifications. The fixation is due to the unconscious realization of the sexual inferiority and the youth makes no attempt to search outside of the family circle for a true libido object. This fixation in turn frequently enables him to adjust his sexual life on a nonadult basis and so we find at the outset many cases of homosexuality tied up in this complex situation. Probing will, if properly directed reveal this complex conflict and enable the patient to see what he is doing and so make a new adjustment which will not be based on infantile unconscious cravings. I do not wish to imply that it is necessary for a male to have a gonadal inferiority to render him susceptible to a fixation in the mother. Many cases of even pathological fixation have other causes, the majority of them, in fact, being due to psychological traumata in the years of childhood.

It is not alone the gonadal inferiorities which lead to an avoidance of the adult responsibilities of life. But these inferiorities render their possessor more likely to make an adjustment, unconsciously to be sure, in this manner. All stages will be observed, a frequent type will be revealed as the effeminate superesthetic with mincing mannerisms. On the other hand we may find, as a result of a similar gonadal inferiority, the same degree of fixation in the mother or substitute mother object and physically the man be athletic, interested in all types of socalled manly sports as a compensation to prove himself manly, or an unconscious effort to portray the vigorous male as a substitute for the impaired gonadal function. One of the most frequent methods of compensation is the selfadvertised virility of the male whose boasts of sexual conquests would make Pantagruel look to his laurels. Visits to brothels and affairs with married women and powers of sexual endurance are discussed among their male friends, not alone in an exhibitionistic fashion but again to prove manly attributes as measured in sexual accomplishments. These are merely psychical manifestations of an attempt to compensate for the gonadal inferiority which they only realize unconsciously.

Recent studies of pathological exhibitionism have proved that the exhibition of the genitals, nates or other parts of the body is traced to the unconscious idea that the visual perception of the parts would make their owner irresistible. This then is clearly a compensatory mechanism closely allied to the displaced exhibitionism of a swelling biceps or a liberal expansion of the thorax. Jelliffe[1] has reported a case which will illustrate this point with clarity.

He examined a young man who had been accused of exhibitionism. The accuser was a woman whose own psychosexual difficulties made her evidence none too valuable. Her having seen the boy's genitals may have been due to a projection of her wish or she may have seen them in reality. At any rate her reaction was a rather unusual one which may have been due to abnormal environmental conditions or a neurotic disposition. Nevertheless the point to be decided was whether the boy had exhibited his genitals. When he was questioned his denial was not too vigorous and from lack of perturbation during the period of his examination considerable doubt as to his guilt was established. A physical survey of the boy revealed small, sharply pointed lateral incisors, the testicles were undersized. These facts led to further investigation which yielded corroboratory evidence, and it was discovered that the boy had exhibited himself on other occasions. A careful psychological examination including an exploration of his unconscious showed that the sexual inferiority had led to the compensation of exhibitionism.

Jelliffe has also reported in discussion other related types of the gonadal lateral incisor stigma. One patient he had had under observation a number of years had no lateral incisors. They never had appeared and x ray studies showed no traces. Yet this patient had no evident testicular variation—had had two children—but had a marked sex inferiority complex which was much overcompensated, giving rise to affective tensions resulting in the production of a duodenal ulcer through vagotrophic action (hyperadrenalemia with exhaustion).

Another of his observations concerned an individual with no lateral incisors. No x ray examination had been made. The testes were apparently normal. There were no children. The spermatozoa tested for motility showed marked diminution especially in viscous fluids. The physical overcompensations were highly subtle and complicated.

Referring back to the type of male whose libido is flitting about in butterfly fashion, we find as another component, added to his unconscious desire to manifest virility to himself and his associates, the reluctance at becoming attached to any one woman. This is brought about by his unwillingness to cut the bond that exists between himself and his mother object. Here we find the clue to unhappy marriages, for propinquity and a half reluctant urge to conform is even in conflict with the unconscious infantile strivings and efforts at compensation. Here we find the male constantly endeavoring to look down upon his mate, trying to keep her on the level of the prostitute so that he may not be breaking away from his fixed mother object. At times he will endeavor to place his mate in the position of the mother object as an aid in making a transference. This not uncommon procedure will frequently result in psychic impotence in the male, for at times his unconscious efforts become so apparent to himself that his conscious mind will catch glimpses of the incest motive behind his unconscious attempts to replace in toto the mother object of his earliest tabooed erotic fantasies. Here again the male may make the best of what he considers a bad bargain and seek erotic satisfaction in other quarters.

---

[1] Jelliffe, Smith Ely, Eastern Medical Society.

One of the compensatory phenomena observed in the male which may have a gonadal basis but may have other points of origin is the sexual inferiority which seeks to overcome a difficulty of a definite pattern situation. In this instance it is the difficulty of overcoming a sexual rival, the pattern being based on the original Oedipus situation, that is, the father or father image being the successful rival, therefore he must be overcome before the libido object can be attained. Here then we find the attractiveness of the female for this type of male in the married woman, for the husband of the woman supplies the rival and in overcoming him by capturing the woman in fantasy or reality a compensation is affected. This situation is frequently encountered and to rule out the possibility of the pursuit being coincidental it is found that when the rival is out of the way interest is lost in the socalled libido object.

We shall now consider briefly a few salient points in the psychoendocrine situation from the gonadal point of view in women. In women the gonadal index, as measured by the endocrines, is just as marked as in men. The concomitant compensations, however, are not completely analogous. This holds in the physical as well as the psychical fields. Changes, as indicated by the lateral incisors, register the entire gamut of gonadal inferiorities from twisted fallopian tubes to the absence of one or both ovaries. Some observers have worked this out on a crossed basis, as in the male, the right lateral incisor being the tabulator for the left ovary, and vice versa. Others have gone a step farther and state that the sex of offspring can be determined on this basis. I have corroborated this in certain instances but the number of cases observed of congenitally absent lateral incisors of one or both sides has been insufficient for definite conclusions.

In the female the most common form of endocrine compensation for gonadal inferiorities is the adrenal. An extreme example type would be the case quoted by Kaplan[1] of a woman with congenitally missing lateral incisors who had never menstruated. She showed markings indicative of the part the adrenals had taken in supplanting the function of the missing ovaries. Her skin had many moles and pigmented spots and there were other notable stigmata as well as psychological manifestations emphasizing vicarious adrenal activity.

In these cases the compensatory action of the adrenals, which in some cases cannot be linked with any apparent gonadal inferiority, seems to be accompanied by the typical adrenal drive with a striving for power which would make keen competition for an energetic male. A common picture is the adjustment of the sex life on an arrested homosexual basis; the owner of the impaired ovaries and forceful adrenals assuming the dominant or male part of the union. In short, the process of adrenal compensation seems to render the subject susceptible to the facile adoption of the male attributes and particularly sensitive to the traumata which engender adjustments on arrested or infantile levels of life.

Allow me to illustrate what I mean by being susceptible to trauma. A person with an inferior thyroid mechanism will lose a sum of money in a business deal. Immediately the patient will have symptoms of an active thyroid disorder, with a marked diarrhea included. Another person will encounter the same calamity, and while there will be no direct thyroidal symptoms, the diarrhea will be present due to an anal erotic reaction. A third person will show no untoward manifestations, whether he loses without a murmur and suppress his conflicts in such a way that they may show nothing on the surface, but break forth at a future time when a more vital obstruction, to him, is encountered. It may be a marital disorder or the death of a loved one. Then the whole thing will be rehearsed, in a disguised fashion, to be sure, and the services of a psychopathologist required to set things right by revealing the import of the conflicts.

My attention has been called to the number of cases of impotence arising in the male mates of women of this type. This marital calamity is brought about by the woman assuming the dominant rôle, and so placing herself in a position where it is facile for her mate to transfer his libido to her on a basis simulating his original mother object fixation. Conventions have taught him the taboo of the nicest cravings, and these are suppressed or disguised to a degree for the comfort of the conscious being. When this nicest craving is too forcibly called to the fore by a dominant female, the mother image is vigorously recalled, unconsciously, to the discomfort of the partner, who in turn becomes psychically impotent in extreme cases, while in others the trauma will cause an effort at flight for which an attempt at some rational explanation is offered. This flight is at times succesful, and only a most searching analysis of the unconscious will show the real difficulty which the patient has so strenuously attempted to disguise.

With the attempt at adjustment on infantile levels on the part of the woman, if the strivings are not directed to the subjugation of the male, an attempt is made to discredit him and to belittle him in every way. Unconsciously the woman will endeavor to place the man in some position where he is indebted to her, so she may look down upon him. This is done in order to compensate for her own inferiority, for with the male discredited she is able to bring herself to a higher level.

In these adrenal compensatory types sadistic and masochistic manifestations are the rule with the component fears and hates. This entire mechanism serves a single purpose, and sadism and masochism are closely related psychologically, as has been shown by Freud and others. They are also identical physiologically, for they tend to satisfy the same autonomic cravings. The emotions of fear and hate cause identical visceral changes. Either of these emotions cause an outpouring of adrenal substance into the body tissues. With this bodily craving for power, an adrenal manifestation is temporarily appeased. This biological explanation will help us in our understanding of many of the fear and hate states of our patients.

---

[1] Kaplan: Address before Associated Physicians of Montclair.

Thyroidal inferiorities are more common in the female. We will assume that certain thyroidal inferiorities are primary, for we find evidence of congenital markings which stamp this type of patient, for instance, the diminution or absence of hair on the outer third of the eyebrow. I admit that there are an infinite variety of thyroidal conditions, some compensatory for other endocrine inferiorities and that many symptoms result. At times we find the typical picture as portrayed by Graves, again the thyroidal inferiority will cause an attack to be made in another inferior organ not usually afflicted. It is also to be remembered that we cannot look upon this gland or any other endocrine organ as supervising a single function, even though most careful workers have only isolated a single substance from the gland. This single substance, if we venture to call it that, is extremely complex and may vary in composition to a degree not detectable by our most talented chemobiologists. We do find that the thyroid is closely allied to the gonadal endocrine glands as well as the mammary glands and can to a degree compensate for them in times of stress.

We will then only consider briefly the primary thyroidal inferiorities. This type will have an unstable vascular response and this in turn leads to a general inferiority and fear. This fear in turn will call for an adrenal stimulation giving a certain amount of unconscious satisfaction to the patient for the adrenal stimulation in satisfying the craving, causing an outpouring of adrenal product into the tissues serves to compensate for the inferiority brought about by the original thyroid conditions.

If a patient of this character is enabled to make a transference to someone, the physician, or someone in whom she had confidence, an immediate change is seen. The heart rate is lessened and the tense anxiety state is ameliorated to a marked degree. The patient has found someone who will help share the burdens of the reality which were too great to be handled under the feeling of inferiority which the thyroidal condition caused.

I have mentioned a few of the more common types of psychoendocrine conditions. In the main the illustrations I have attempted to bring forward are not socalled pathological cases but are classed in the *formes frustes* types of endocrine disorders or tendencies. This phase of the subject could be carried on at length and made to include the various endocrine inferiorities with parathyroid involvement which result in convulsive states. No endocrine inferiority can be present without a psychological change, a retreat or a compensation. An understanding approach from the point of view of the psychopathologist should, with a patient of average intelligence, enable him to handle his problems in a more intelligent fashion. It will enable him to look into his unconscious and this exploration will show him what he is attempting to do. He will then be able to make an adjustment on an adult plane and enable him to avoid the promptings of his infantile strivings. It will enable him to channelize his life into constructive work and give him a better understanding of life.

24 East Sixty-third Street.

A Note on the Relation Between the Adrenals and the Thyroid

By GEORGE W. CRILE, M. D., F. A. C. S.,
Cleveland, Ohio.

The adrenal glands are activators of the brain, and that their aid is promptly elicited when increased metabolism—increased work is required, is shown by the fact that adrenalin alone produces nearly all the symptoms produced by the various causes of increased energy transformation, such as emotion, exertion, injury, infection. That is, adrenalin causes increased metabolism, increased thyroid activity, increased blood pressure, increased pulse, increased respiration, leucocytosis, increased sweating, dilatation of the pupils, diversion of the blood to the surface, lowering of the threshold at the myoneural junction.

Of no less significance are the facts that adrenalin causes hyperchromatism and later chromatolysis of the brain cells, just as do emotion, injury, exertion, infection; that it causes an immediate increase in the electric conductivity of the brain; and that when the adrenals are removed the brain cells rapidly degenerate, the animal rapidly loses the power to fabricate heat, and muscular and mental action; and death usually follows.

We conclude, therefore, that the brain is dependent on the adrenals, both for function and for survival. The adrenals may show enlargement in some chronic activations, such as infection, pregnancy, rutting season, exophthalmic goitre. The adrenals, therefore, must be included among the means by which the organism is activated.

Studies of the electric conductivity of animal tissues under varying conditions have shown that adrenalin first increases the conductivity of the brain, as in the inceptive stage of shock, and that the conductivity is then decreased, as is the case in other forms of stimulation (Fig. 1.) If conductivity is related to stimulation, then an increase or decrease in conductivity would be associated with an increase or decrease in function, i. e., with activity or exhaustion. Our electric conductivity observations have indicated that in the inceptive stage of shock or exhaustion the conductivity of the brain is increased, while in every type of exhaustion studied, the conductivity of the brain was decreased when the state of exhaustion was established.

If the activation of the brain is a phenomenon of electric energy, then since electric energy depends upon oxidation, and oxidation in part at least is controlled by adrenalin, it obviously follows that excessive adrenalin would ultimately cause fatigue and decrease permeability.

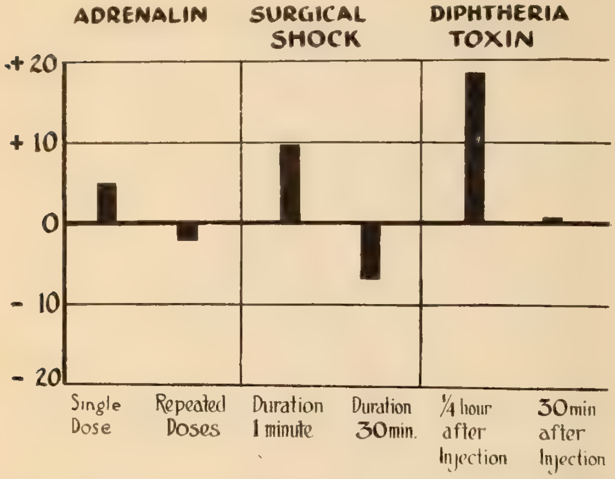


FIG. 1.—Comparison of the effect of a single and of repeated doses of adrenalin on the electric conductivity of the cerebrum with the early and late effects of other forms of stimulation. (Percentile variations from the normal).

Both experimental and clinical phenomena seem to indicate that the body is driven by electricity, which is fabricated in the brain cells with the aid of adrenalin. But we have seen no evidence that adrenalin covers more than the emergencies of moments and hours, or of days. Adrenalin is too evanescent, too volatile, to establish and to maintain evenly an increased receptivity, increased sensitiveness to response, an increased metabolism, both basic and adaptive, day and night, for weeks and months. We assume that the brain has no power within itself to do this, and that, therefore, prolonged activation is accomplished through the aid of some other organ. If electricity is the driving force of the organism, and if electric power is increased by increasing the conductance of the tissues over which it passes, it would follow that there must be in the body an organ which is capable of supplying to the blood for weeks and months a substance that is known to increase electric conductance—the blood in turn supplying this substance to the nervous system. The adaptive storage and discharge of such an agent would answer the theoretical need. Osterhout has shown that iodine increases electric conductance in vegetable tissue, and our researches have shown that the conductivity of the brain and of the liver, the muscles, the spinal fluid, the blood, etc., is increased by iodoform.

Now the function of the thyroid is that of seizing and storing iodine and fabricating it into an iodine protein adapted to the needs of the organism. We have demonstrated in our laboratory, and surgeons are familiar with the fact, that iodine poisoning causes symptoms identical with the symptoms of acute infection. In iodoform poisoning we found brain cell changes similar to those produced by exertion, emotion, infection, trauma, etc. In exophthalmic goitre, we have an exquisitely sensitized organism in which the body functions are dramatically displayed, as if we were projecting on a screen a magnified physiological picture. Exophthalmic goitre gives us a glimpse of normal physiology with microscopic magnification; iodism alone duplicates the symptoms of exophthalmic goitre.

The injection of adrenalin in patients with exophthalmic goitre produces an immediate magnification of the characteristic symptoms (Goetsch test). Measurements of the temperature of the brain by means of the thermocouple showed that in iodized animals the injection of adrenalin causes an abrupt, marked rise in the temperature of the brain in contrast to the more gradual rise produced by the injection of adrenalin in normal animals (Fig. 2).

In those chronic diseases or conditions in which an increased metabolism has continued for a considerable period of time, as, for example, in tuberculosis, in chronic infection, in the rutting season, in pregnancy, in exophthalmic goitre, there is frequently a hyperplasia of the thyroid gland. Each of these states is characterized by increased metabolism, increased heart action, sweating, easily flushed face, mental excitability, disturbed sleep, unstable heart action, unstable sensitized organism, and chronic fatigue. In each, after a period of rest, graded muscular action is beneficial; emotional influences are damaging.

These observations suggest that some cases of chronic exhaustion may be due to the same cause as acute exhaustion; that chronic exhaustion is due to a persistent change in the activating glands. The thyroid and the adrenals may be so altered that their output is increased. If it were found that the thyroid and the adrenal were enlarged, or if the thyroid cells were enlarged, or if the iodine content were altered, the analogy would be sufficiently complete to regard many of the forms of war neurasthenia, disordered action of the heart, exertion syndrome, etc., as belonging to the same class, but not identical with mild exophthalmic goitre. Lieutenant-Colonel Schwab observed symptoms of exophthalmic goitre in many soldiers. It is interesting and significant to note that the same measures that benefit these cases of exophthalmic goitre also benefit these other cases—e. g., mental rest, simple pastoral existence,

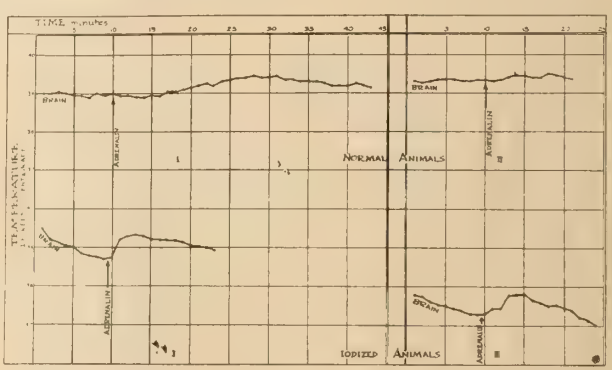


FIG. 2.—Comparison of effects on temperature of brain of equal doses of adrenalin (per kilogram) in normal and iodized animals.

most carefully governed muscular activity. Each class is improved by sound sleep, by wholesome, plain food—by nursery regimen. Each is made worse by emotional excitement, by infection, by injury, and many other agencies. A further point of interest is the fact that patients who have taken too much thyroid extract show many of the same symptoms.

Aschoff and other investigators, by stimulation of the thyroid nerve supply, have shown that the thyroid gland is activated by nerve impulses. A large experience in blocking the nerve supply of the thyroid and in tying the superior thyroid vessels in exophthalmic goitre leads us to the same conclusion. This view has also been confirmed by Cannon, who joined the phrenic nerve to the sympathetic leading to the thyroid, so that as a result an "electric charge" came to the thyroid over the phrenic nerve with each respiratory rhythm.

What difference does it make what the driving force is, so long as it is a drive that causes the transformation of energy, and the brain is able to carry its part, the adrenal its part, the thyroid its part, and other organs their part? In time, one or another vital organ will fail in this stepping up process, in this increasing pace, until some part of the mechanism fails. When an essential part of the mechanism weakens, there results an impairment of the power of the entire mechanism to do work—there is exhaustion. In exophthalmic goitre, in the infections, in grief, in fear and worry, and in excessive work, the mechanism is driven sometimes to acute, sometimes to chronic, exhaustion. If the exhaustion is overwhelming and acute, as after injuries, hemorrhage, perforation of viscera, and other disorders, it is called shock. In each case the symptoms are similar; the causes are identical; the principles of treatment are the same; the physical and the chemical phenomena are alike.

1021 PROSPECT AVENUE.

Does the Pituitary Secretion Influence the Development of the Prostate?

By HANS LISSER, M. D.,
San Francisco.

The question of whether the pituitary secretion influences the development of the prostate is suggested by the examination of five boys seen in the last few months, whose records are herewith briefly recorded. All of these boys exhibited many signs and symptoms which in the light of our present knowledge justified a diagnosis of preadolescent hypopituitarism, either of the Levi-Lorain or Fröhlich types. All of these boys revealed either entire absence of the prostate gland or an exceedingly diminutive organ just barely palpable by rectal examination. Obviously aberrant prostatic tissue in unusual location could not be excluded.

Since Fröhlich in 1901 described the syndrome dystrophia adiposogenitalis, attention has been directed to the relationship frequently existing between abnormal pituitary secretion and abnormal genital development. It is now well known that hypopituitarism prior to puberty is accompanied by infantile hypoplastic genitalia, and the literature abounds in such case reports and in corroborative animal experiments. Little notice, however, seems to have been taken of the status of the prostate in these cases. Probably some prior reference to this interesting clinical condition will be found in the literature, but a hasty search just made fails to reveal such an observation. A more thorough investigation of the literature is being undertaken. Barker (1) does not refer to the prostate in his description of preadolescent hypopituitarism. Cushing's invaluable monograph (2), containing so many remarkable examples of infantilism and sexual disturbances, studied elaborately and recorded with painstaking detail, makes no mention whatever of the prostate gland. Nor does Bell in his book on the hypophysis, nor Englebach in his recent classification of pituitary disorders. In view of the striking genital abnormalities repeatedly emphasized in hypopituitarism, it would indeed be surprising if the absence or diminutive size of the prostate has never before been noted.[1]

Apparently it is not customary for pediatrists to examine the prostate in their routine physical investigations, probably because disease of this organ in childhood is rarely if ever noted; so that Holt, for example, omits any mention of the prostate in his widely used textbook (3). Rectal examinations, however, are frequently performed in children for various reasons, and it might perhaps be well in future to note the size of the prostate; probably it will be missing or underdeveloped in conditions other than hypopituitarism. Quinby, for instance, reported in 1916 a remarkable case of pseudohermaphrodism where the external genitals resembled the male while the internal organs proved to be female—no prostate was found; this was, however, dependent in all probability on a tumor of the adrenal cortex and not on hypopituitarism.

It would be inappropriate in this brief article to theorize on the possible interrelationship of the pituitary and the prostate; whether the anterior or posterior lobe or both exert an influence on the development of the prostate, although it may be remembered in this connection that Goetsch in 1916 contributed valuable observations in feeding experiments upon hypophysectomized rats—anterior lobe stimulating the growth of the prostate while posterior lobe did not. One may wonder whether the pituitary hormone or hormones act directly upon the prostate or indirectly via the testes or suprarenal cortex; or whether the prostate truly elaborates an internal secretion of its own which is inhibited by decreased pituitary secretion—and so on. After all, such theories would be somewhat speculative at this time.

---

[1] Just found note by George Dock in Osler's *Modern Medicine,* Vol. IV, p. 816. The Pituitary Body; Acromegaly Hypopituitarism. "In males the penis and scrotum are infantile in size and shape, the testes minute, sometimes undescended; the prostate small."

It will suffice to record briefly the following five cases. The first four were referred to me in the endocrine clinic of the University of California Medical School and Hospital by Doctor William Palmer Lucas, chief of the pediatric department. The fifth case was referred to me in private practice by Doctor Dewey Powell, of Stockton, California. The rectal examinations for the prostate were made in all five cases by Doctor Frank Hinman, chief of the Urological Division. This opportunity is taken of acknowledging their courtesy.

FROEHLICH'S HYPOPITUITARISM ASSOCIATED WITH FEEBLEMINDEDNESS AND ABSENCE OF THE PROSTATE.

Case I.—R. H., boy, aged ten years. Patient was one of twins, full term; first talked at the age of two and a half years, first walked at three; always fat and heavy; never played with other children; goodnatured; mentally apathetic, eyes always crossed; could not read, only spoke phrases, no sentences; neither constructive nor destructive; ravenous appetite; sleepy. Measles, pertussis, pneumonia three times, circumcision, tonsillectomy and adenoidectomy. Fat boy with large quadrangular skull, coarse dry hair, female contour, broad pelvis, enlarged mammæ, marked mons veneris; female contour of external genitals, with penis in position of enlarged clitoris, no hypospadia, external genitals infantile; large feet and pudgy hands with marked muscular hypotonicity; taché cerebrale dermatographia.

No prostate was felt rectally. The mental age was from three to four years, or six years' retardation. The laboratory findings were: Blood pressure 118/62, urine negative, blood picture negative, Wassermann negative, Von Pirquet negative; blood sugar curve, fasting 0.103 per cent., one half hour later 0.129 per cent., one and one half hours later 0.107 per cent., two and one half hours later 0.088 per cent.; renal sugar curve negative, eye fundi normal, x ray sella and skull negative, x ray of hands negative.

This boy and his twin brother (Case II) are being kept under observation and are receiving increasing doses of whole gland pituitary extract. Their cases will be published some time later in more detail, since in addition to the absence of the prostate these twins are of extraordinary interest from the fact that they show identical endocrinopathies, suggesting that their pathology must have originated in the earliest cell division.

Case II.—W. H. (Hospital No. 7892, O. P. D. No. 67081), boy, twin, aged ten. The history, physical examination, mental examination, and laboratory tests were in every respect precisely similar to the findings of the twin brother (Case I) recorded above, except that Case II was fatter, weighing seven pounds more, and being one inch taller. The figures for the blood sugar curve were 0.116, 0.149, 0.139, 0.106.

INFANTILISM RESEMBLING LEVI-LORAIN TYPE OF HYPOPITUITARISM—PROSTATE VERY SMALL.

Case III.— W. G. (Hospital No. 7925, O. P. D. No. 66862), boy, aged fifteen. The family history was essentially negative except for a sister, aged seventeen, who had secondary sex characters but was quite short and fat and mentally aged about three. The past history revealed measles, mumps; tonsils and adenoids removed. The patient felt well—noticed that he had not grown for two years. The examination showed him to be undersized, underdeveloped, slender. His height was four feet six and a quarter inches, weight sixty-five and a half pounds. He appeared physically to be about eight years old; genitals infantile; no secondary sex characters; prostate very small, otherwise essentially negative; blood pressure 110/75. The mental age was nine years, or six years' retardation—high grade defective. The laboratory findings were: Urine, negative; blood picture, normal; Von Pirquet, positive; blood Wassermann, negative; spinal fluid, negative; urine sugar curve, negative; blood sugar curve, 0.067, 0.135, 0.122, 0.113; x ray, hands, negative; x ray, skull: short skull base, small sella, diffuse convolutional markings. The patient was under observation and receiving increasing doses of anterior lobe pituitary.

LEVI-LORAIN HYPOPITUITARISM, WITH SMALL AMOUNT OF PROSTATIC TISSUE.

Case IV.—W. R. (Hospital No. 7893, O. P. D. No. 66695), boy, aged eighteen. The patient's mother had numerous miscarriages; uncle had catalepsy. The past history was essentially negative; no ordinary diseases of childhood. Tonsils removed twice at the age of eight and nine. There were no complaints except underdevelopment physically. The examination showed the boy to be slender, underdeveloped, with muscular and sexual appearance of about ten years; high pitched voice, no secondary sex characters; no hair on face, axillæ or pubes—small penis and testes—very small amount of prostatic tissue barely palpable. The patient passed all the Binet-Simon tests, even adult, without missing one; there was no mental defect. The laboratory findings were: Blood pressure, 118/60; urine, negative; blood picture, normal; blood Wassermann, negative; spinal fluid, negative; Von Pirquet, negative; blood sugar curve, .03, .224, .127, .076; urine sugar curve, negative, negative, positive, negative; x ray, chest, extensive peribronchial thickening; x ray, skull, sella somewhat small. Patient is under observation and is receiving increasing doses of anterior lobe pituitary.

HYPOPITUITARISM, LEVI-LORAIN TYPE, ASSOCIATED WITH MENTAL RETARDATION AND ABSENCE OF THE PROSTATE.

Case V.—(Private case.) J. B., boy, aged fourteen. Two brothers, aged three and seven, very well, big, strong, and robust. The seven year old brother was as large as the patient and weighed more. There were two sisters, aged sixteen and seventeen, and normal. The patient was very difficult to rear. All manner of milk preparations were tried; finally successful with goat's milk. Walked when not quite two years. Did not really talk until three years of age. Measles at three; whooping cough at six; influenza at twelve; scarlet fever at thirteen. He was a nervous child; absolutely lacking in mathematical sense; was in the fourth grade at school. He had a good disposition; could not concentrate; played actively; no signs of puberty. The physical examination: Height, fifty-five inches; weight, fifty-nine and a half pounds; the boy was knockkneed; prominent scapulæ; flat feet; marked scoliosis; prominent ears; thin, narrow, funnel shaped chest; baggy lower lids and heavy, expressionless eyes. Genitalia: The folds of scrotum suggested labia majora; prominent mons veneris. The penis was normal, right testicle was only partially descended and left testicle well up in the inguinal canal, but upon stripping the canal it could be brought down so as to be palpated in the upper portion of the scrotal sac. Both testicles were atrophic and small, the right much more so than the left. It was not possible to palpate any remnant or portion of the prostate by rectal examination. The laboratory examination showed: Urine, negative; blood pressure, 110/70; the mental age was seven (seven years' retardation) (Dr. Eva Reid); an x ray of skull showed sella was markedly small, both in depth and anterior posterior diameter. The patient is receiving anterior lobe pituitary in increasing doses, and will be operated upon in order to place testicles properly in the scrotal sac.

CONCLUSIONS.

1. Five cases of preadolescent hypopituitary infantilism are recorded, two of the Fröhlich, and three of the Levi-Lorain types—all boys.

2. Their ages are ten, ten, fourteen, fifteen, and eighteen. Their corresponding mental ages are three, three, seven, nine, and eight.

3. Three boys showed complete absence of the prostate so far as could be determined by rectal examination. The other two revealed a very diminutive prostate. This would seem to be a new clinical observation.

4. It would suggest that the normal development of the prostate is in part at least dependent on normal pituitary secretion.

REFERENCES.

1. Barker: *Monographic Medicine.*
2. Cushing: *The Pituitary Body and Its Disorders.*
3. Holt: *Diseases of Infancy and Childhood.*

240 Stockton Street.

The Interstitial Gland—What It Is and Its Supposed Function*

By W. H. MORLEY, M. D.,
Pontiac, Mich.

During the past twelve or eighteen months, the interstitial gland, directly or indirectly, has been a topic of more or less discussion among medical men and to a large extent a source of ribald wit among the wags of the lay press. One often hears the questions asked both by the profession and the laity, "What is an interstitial gland? What is its function? How will it restore youth in the aged? Where and how may one be procured?" and so on. It is an attempt to elucidate some of the questions that the present article is written.

The term interstitial gland was given to a special group of cells found in the ovary of animals by a Frenchman, M. Bouin, about 1900. Later this name was applied to similar cells or groups of cells in testes by P. Bouin and P. Ancel, in 1903. Since that time much work, both research and clinical, has been done, and the literature is rich with monographs, memoirs and case reports of the interstitial gland. As to the origin of these cells, whether in groups and forming an interstitial gland or scattered about singly in the ovarian connective tissue, there seems to be much difference of opinion. Rasmussen, who, in an exhaustive monograph on the cyclic changes in the interstitial cells of the ovary and testes in the woodchuck, was able to observe that these cells did not present the same appearance at all times nor in all seasons. For example, during rutting in the animals he observed, or during hibernation in these same animals, marked changes could be distinguished in these cells from what their appearance was at other times. Then, too, the effect of the x ray, of ovarian transplantation and of extirpation, all tend to exert certain changes that have been observed and studied. The results that Rasmussen found in the woodchuck obtain in other lower animals. As far as could be learned from a perusal of the literature on this subject, very little work has been done on the human ovary and testes in this connection. Of course, it must be remembered that there is a great variation of opinion as to just what constitutes interstitial cells and hence an interstitial gland.

Falta has made the statement that an interstitial gland, in women, is a cell complex that develops from the theca interna of atretic follicles. In explanation, an atretic follicle is a graafian follicle that has not reached full development, that never has contained an ovum, and hence does not ripen and discharge its ovum. But aside from this group of cells found in the female ovary, there are numerous cells of like character scattered throughout the ovarian tissue. In the testes the interstitial cells are found in the interstitial tissue between its seminiferous tubules, and are arranged in irregular groups. These latter are often referred to as Leydig's cells. There is no doubt that this scattered and irregular arrangement of the cells has led to much inaccuracy in their study, and that at certain seasons, such as rutting and hibernation, many errors have resulted in observing whether these cells were atrophic, hypertrophic, or hyperplastic. To repeat, the interstitial cells, a group of which is called an interstitial gland, arise from the theca interna of an atretic follicle, at least the majority of observers agree; some few maintain that they are of stromal origin. Where the interstitial cells of the testes originate, I was not able to find. The point to remember is, however, that there are such things as interstitial cells; that a group of these cells, in the ovary especially, is called an interstitial gland, and that while there seems to be some difference of opinion as to their origin, nevertheless they do exist.

---

*Read at meeting of Detroit Academy of Medicine, February 8, 1921.

Concerning the function of these interstitial cells and hence of the interstitial gland, the consensus of opinion seems to be that they are part of the internal secretory mechanism of the ovary, and the chief, if not the only, source of the internal secretion of the testes. It is supposed, and to some extent is proved by clinical observation, that in the female up to the time of puberty and after the menopause the entire source of the internal secretion of the ovary is the interstitial gland. Between puberty and the menopause the corpus luteum, acting in conjunction with or independently of the interstitial cells, produces the internal secretion of the ovary.

In a recent article two Mexican investigators, Ochoterena and Ramirez, reporting upon these two sources of the internal secretion of the ovary, conclude as follows: "Of the two endocrine functions of the ovary, the corpus luteum mediates that having to do with the formation of desidual cells, and the modification of the uterine mucosa, which favor nidification of the ovum. If fecundation occurs, the structure is transformed to the corpus luteum of pregnancy and alters the nature of its secretion. It assumes relations with the mammary glands and other endocrine organs. The secretion of the corpus luteum being, as previously mentioned, antagonistic to that of the interstitial cells, when the corpus luteum retrogresses or is experimentally suppressed, the action of the interstitial secretion is manifested. This secretion is the determining factor of menstruation; during the menstrual period the corpus luteum is either nonexistent or in a regressive phase, while the interstitial cells manifest with maximum intensity the secretory phenomena. The ovarian congestion, which coexists with menstruation, favors the maturation of the graafian follicle. This ruptures and gives rise to a new corpus luteum which, in turn, depresses the interstitial secretion, causes the discontinuance of menstruation, and thus again initiates the cycle previously described."

These conclusions differ somewhat from what was said above, and while I might take issue with some of the statements on the ground alone that no experimental work on animals or report of clinical observations in humans is given in substantiation of these statements, time will not permit.

A recent paper on the internal secretion of the testes by Massaglia gives some interesting work by this author on cockerels. Without going into detail, Massaglia ligated the spermatic duct of some of the cockerels and noted that there was no change in the secondary sexual characteristics, such as the comb, the spurs, the plumage, the sex instincts, the crowing, and the fighting tendency. There is a marked change in these parts when the cockerel is caponized. This author was able to conclude that ligation of the spermatic duct (vas deferens), while it stopped the external secretion of the cockerel's testes, did not interfere with the secondary sex characteristics—hence proving that the internal secretion is elaborated by Leydig's cells (interstitial cells), which were found unchanged after ligation of the spermatic duct.

All three of the articles so far referred to in a general way are well worth careful perusal by anyone interested in this subject.

The advantage of the knowledge of all these facts, which have been so rapidly and superficially enumerated, and their application in the transplantation of either the ovary or the testes, especially the latter, brings us to the question of combating the ravages of old age by organ grafting. It is this division of the subject that is made the basis of a work by Serge Voronoff, in a book called *Life*, or a Study of the Means of Restoring Vital Energy and Prolonging Life. No attempt will be made to review the book as a whole. Excerpts will be given here and there to show the trend of the work. Anyone more deeply interested in the subject described in this work is advised to get the book and read it at his leisure. It is interesting reading, even if you disagree, as I do, with its tenets.

Voronoff, after an elaborate and exhaustive introduction on the sorrows and misfortunes of old age, asserts that these infirmities may be offset by the transplanting of the sex glands of youth into those thus afflicted, thereby prolonging life many years. Most, if not all, of his work has been done on animals or on an animal, for he decided that sheep were best suited to his efforts. He reports one case in which he transplanted the thyroid (one lobe) of a simian ape to a boy of fourteen years. He also reports one case of skin grafting and several of bone. He has no cases of transplanting the gonads in the human subject.

The advantage of transplantation of gland tissue, either auto, homo, or hetero—and I refer especially to transplantation of the gonads over the ordinary methods of organic therapy—is a matter of grave doubt. The transplanted tissue soon atrophies and the beneficial results, if any, are ephemeral and so slight that they are not worth the risk and trouble of an operation.

REFERENCES.

1. Falta: *Ductless Glandular Disease.*

2. Massaglia: *Endocrinology*, 1920, vol. iv, p. 547.

3. Ochoterena and Romirez: *Ibid*, 1920, vol. iv, p. 541.

4. Rasmussen: *Ibid*, 1918, vol, xi, p. 351. (Literature to 1918).

5. Voronoff: *Life*, A Study of the Means of Restoring Vital Energy and Prolonging Life, 1920, E. P. Dutton & Co., New York.

Endocrine Gland Extracts

Their Manufacture and Use

By SPENCER G. STRAUSS, A. B., M. D.,
New York.

Although throughout the literature on the endocrine glands and their application therapeutically there is found much wisdom, both empirical and based on experiment, the busy medical practitioner can find little of a purely practical nature. There is little to be found concerning the quality of these products, nor is there much to be found regarding the mode of their administration. Of the former, I shall briefly point out some of the essential features concerned in the collection, the separation, the purification, the standardization and marketing methods of these substances, pointing out, as I go along, those features which seem objectionable to me as a clinician, in so far as they are likely to render the results somewhat confused. Of the latter, whatever I say is based on my own personal experience with sick human beings. I do not assert for it any sort of finality nor superiority over other methods, but it is one way of using these products, and I feel sure that in the criticism of this method, far better ways of therapeutic procedure will be developed.

None of the commercial endocrine products are obtained from the human species, for obvious reasons. So all through our therapeutic work we must bear in mind that, whatever product we are using, it is a foreign proteid when introduced into the human body, whether the introduction is by mouth or hypodermically. To the slaughter houses we must go for our raw material, and in the United States there are one hundred and forty-seven independent packing houses, all of which own one or more slaughter yards, but in spite of this seemingly great supply ground it appears that the demand for pituitary glands, for example, has increased to such an extent in the last few years that at the present time one of the largest pharmaceutical houses is already arranging to take over the supply of these glands from foreign markets, especially those in the Argentine Republic. As a rule the raw materials are gathered from animals which are perfectly healthy; these animals pass the United States Government inspection as well as the inspection by the slaughter houses' own officials before they are killed. The raw glands are removed by hand from the carcass and immediately packed in ice and delivered to the laboratories where they are to be refined and prepared for therapeutic administration. It is a fact that these raw glands deteriorate much more rapidly at any temperature above the freezing point than do the ordinary animal products. So marked is this characteristic that one of the greatest packing houses in the country refuses to send any of the crude glands away from its own establishment, because it has learned that in a refrigerator car, traveling but a short distance, a lot of these glands may become unfit for use, although the conditions were such that the balance of the material in the car, ordinary meat products, were unaffected. In this particular house the crude glands are carried immediately upon separation from the carcass to the laboratory, and only twenty-four hours elapse between the slaughter of the animal and the complete desiccation of the gland. Naturally, this happy state of affairs is not universally true. Some pharmaceutical houses, on account of their geographical position, are compelled to obtain their crude glands from considerable and varying distances, trusting to the preservation by refrigeration in their shipment. One manufacturer who attempts to market his products upon order only, told me that he keeps the crude glands in a frozen condition until they are required. The question arises in my mind as to whether or not big differences in the finished product are not in some cases due to the differences in the speed of transportation and the refrigeration.

After these glands are received by the various laboratories they are dissected out by hand, freed from as much adventitious material as possible, and then ground or macerated by hand or by machine, following which the material is dried. It is in this process of drying that many variations appear. One manufacturer dries with warmed air at normal barometric pressure. One manufacturer dries in vacuum with a temperature of 140° F. Another in vacuum with a temperature between 50° F. and 60° F. Another with a temperature of 90° F., and another with a temperature between 40° F. and 50° F. Naturally the time required for drying varies in proportion to the height of the temperature and to the rarity of the atmosphere in which the product is dried. It would seem that in all probability certain qualitative changes must appear in the finished product which can be ascribed to these variations in the drying temperatures. It would seem that in this process as low a temperature as possible should be maintained, and that the drying made as speedily as possible by the use of vacuum dryers.

The next step in the manufacture is the process of defatting. Here, again, methods of wide variation are employed. In one laboratory I am told there is little or no defatting except when the material looks or feels particularly greasy to the individual who is responsible. In another laboratory there is no defatting practised for any of their products. Still another firm subjects all their material to a petroleum ether process, while still another uses for this process either gasoline or acetone or carbon tetrachloride. While it is a fact that the active principle of the posterior lobe of the pituitary gland is insoluble in ether, petroleum ether, chloroform and absolute alcohol, we have no data available for basing a similar statement regarding those glands for which we have no tests of standardization, and in all probability certain quantitative and qualitative changes do take place in this variety of processes which have a decided influence on the finished product. The removal of fat, particularly when excessive, is certainly desirable, inasmuch as its presence would lead to the development of rancidity and offensive odors which might prove disastrous in the administration. Altogether it seems that the medical profession would benefit by being informed exactly which agent was used in this process for each particular finished product. In this way, clinical results would become more accurately obtainable.

Following this defatting process the material is, as a rule, further pulverized and prepared for the market, being mixed with milk sugar and finished either in tablet form or in capsules. Two factors enter into the manufacture of tablets which might have an effect on the quality of the finished product, the first being the necessity of using a liquid so as to give the mass a certain cohesiveness (alcohol is at times the fluid used, and it conceivably might alter the nature of the enzyme); the second is the theoretical possibility that the pressure necessary for the stability of the tablet might have an influence qualitatively.

The question of gland quantity incorporated in the various tablets is answered in a number of ways by the different manufacturers. As a rule these tablets represent a certain amount of the fresh gland. On the other hand, certain commercial products represent the indicated amount of the dried gland, and, finally, one manufacturer computes his doses in such a manner that one tablet bears the same ratio by weight to the entire gland as the weight of the average human being bears to the weight of the animal from which the tablet material was taken. In other words, taking a tablet of entire pituitary gland extract for example, the extract in one tablet equals by weight one tenth of the entire pituitary gland of the steer; based on the fact that the average human being of 150 pounds equals one tenth of the weight of the average steer, 1,500 pounds.

In this connection it is interesting to note that approximately five pounds of fresh pituitary glands are obtainable from one thousand head of cattle, which quantity, when desiccated, is reduced to one pound in weight. In the case of pineal glands, two thousand heads of cattle are required to supply five pounds of the fresh or one pound of the dry gland. Fifty sheep supply one pound of fresh thyroid gland, which is reduced to three drams on drying. Whether it is preferable to supply these endocrine extracts in tablet form or in capsule form is a question, but it would seem probable that the material in the ordinary uncoated tablet is liable to a greater amount of deterioration, due to the processes involved in tablet manufacture as well as to oxygenation, than when the fresh powder is protected in a capsule. Another danger which the tablet carries is that it places a peculiar restraint upon the physician's therapeutic endeavor. The minimum quantity he will use is fixed by the manufacturer and in many instances the maximum by the doctor's own bad twice daily and thrice daily habits. I shall refer to this again.

Personally, I think the practitioner should prescribe the powder, which is supplied in bulk, in capsule form in such quantities and in such combinations as he believes fit each individual case. The danger of using doses calculated on a weight ratio lies in the fact that individual animal glands show considerable active principle variation in those cases where such determinations are possible.

Turning our attention more particularly to the specific glands, we find that the only three preparations which are standardized are the posterior lobe of the pituitary, the thyroid, and the extract of the medulla of the adrenal glands, known as adrenalin. This last, by the way, being a natural, not a synthetic product, as many believe.

The extract of the posterior lobe of the pituitary is removed from the dried gland tissues in aqueous solution, standardized and placed in ampoules. Some of these preparations contain a preservative, while others do not. Here, as in all other ampoule preparations, great care must be taken to use only a neutral glass, which is at the present time obtainable. This pituitary solution is standardized according to the requirements of the U. S. P. so that "one mil of solution of hypophysis diluted 20,000 times has the same activity on the isolated uterus of the virgin guineapig as 1:20,000,000 solution of betaiminazolylethylamine hydrochloride (histamine) when tested as directed by the United States Hygienic Laboratory" according to the method of G. B. Roth. This observer (1) finds that in spite of this standardization a great variation exists among the commercial products. This method is objected to on account of its difficulty, because histamine is not absolutely stable, and, finally, because the exceedingly high dilutions necessary for the execution of this standardization render the method susceptible to proportionately great error. An alternate method of standardization is offered by R. A. Spaeth (2), who proposes that the standard used be a Locke solution plus the addition of an excess of potassium chloride. It is apparently a better method. It must also be remembered that various lots of this extract differ not only in their oxytocic principle, but also in their blood raising principle. The two do not run parallel; some are rich in one and poor in the other, whereas the reverse may be true, so that in the preparation for the market of this extract the careful manufacturer must adjust his various lots so as to bring the final product up to this dual standard. And the full sphere of pituitary gland extracts does not depend solely upon these two principles.

In the marketing of this particular product we find a great variety of strengths. Ampoules containing one half, one, two, three, four or six times the U. S. P. strength are purchasable; some are called surgical and some obstetrical, although they contain exactly the same material. One firm markets the same strength solution but in small and large sizes. This scheme, although making for simplicity, is objected to on the ground that in some instances excessively large amounts of the extract would have to be used to accomplish the desired effect. Some contain a chemical preservative; others do not. At the present time the U. S. Hygienic Laboratory does not supply the manufacturers with a standard sample. In the preparation of all pituitary gland extracts, that of the steer is the only gland used. As you know, the steer is the castrated adult male. The castration causes many structural and functional changes in the animal, for the most part due to alteration of the pituitary gland secretion. Although this fact has probably no bearing on the obstetrical or surgical uses where introduction of this gland is made purely for medicophysiological effects. It would be interesting to know if the glands of the female and the uncastrated male would give different results in certain medical situations than do the extracts obtainable.

In the manufacture of thyroid gland preparations, the gland of the sheep alone is used in one instance, in another that of swine, but in all cases the standardization is done according to the iodine content. The U. S. P. IX states: "The thyroid glands of animals which are used for food by man, freed from connective issue and fat, dried and powdered, and containing not less than seventeen hundredths per cent. nor more than twenty-three hundredths per cent. of iodine in thyroid combination." In a very interesting paper recently published, Tatum (3) brings out the fact that the "ratio of the percentum of iodine in the cells to the iodine in the whole gland appears relatively constant for pigs, sheep and beef thyroid content." His figures also show that the pig thyroid contains the greatest amount of iodine, that the beef thyroid the least, while that of the sheep falls in between the two, and further that some individual animals possess iodine in their thyroid glands four times as much as others do. Probably the iodine content will not be the final criterion upon which is based the determination of the efficiency of the thyroid preparations, and at present one laboratory is devoting much time to other standardization methods. In a paper, Fenger (4) finds that in the thyroid of the fetus iodine is present in greater concentration than in the adult gland. The same is found true regarding the active principle of the adrenal gland. Surely the active life of the adult throws a greater stress upon these glands than does the sheltered life *in utero,* and for this reason they must be more active, and in different ways, yet according to our present standards they would seem to be less so. Janney and Henderson (5), in a recent article, state that "Treatment of hypothyroidism is best carried out with Kendall's thyroxin and controlled by estimation of the basal metabolic rate."

The source of the other gland material varies with different manufacturers, some use the thymus gland of the sheep, others that of suckling calves. Orchitic substance is derived from rams in some instances, in others from bulls. In the case of ovarian extract, some manufacturers use the ovary of the cow, others the sow, while in the case of adrenal gland extracts no difference is made between the sexes, male and female glands alike being used. It seems that these variations could at least be indicated by the manufacturer, and I feel that this is necessary, because these differences must exert a profound physiological effect in their administration. In the case of the corpus luteum the ovary of the pregnant cow is generally used, although some firms use both that of the pregnant cow and the sow, while others the sow alone. The latter animals are extremely difficult to obtain, inasmuch as the packers are very loath to kill them, in view of the fact that within a few weeks the resulting litter of pigs will be of greater value than the ovary alone would be. On the other hand, in herds of cattle it is found that over sixty per cent. of the cows slaughtered are pregnant. Naturally the only corpus luteum which should be used is that obtained from pregnant ovaries; and a careful differentiation should be made in the marketing of the products labeled whole ovary and ovarian residue.

The question of the form in which these products should be prescribed must be decided by the physician himself. His choice lies between the powder in capsule form or the compressed tablet, either coated or uncoated, and in some few instances in ampuled solution by the hypodermic method. To my mind the method of choice is the former, as may be concluded from certain facts outlined above. In all probability a different effect, clinically, would be obtained when these extracts are used hypodermatically. Opinion today, however, is fairly well agreed that perfectly satisfactory results are obtainable when these products are given by mouth. Their administration is naturally required in some instances over long periods of time which would render the hypodermic method unsatisfactory.

The next question which the practitioner must decide is whether he will use single gland extracts alone or in combination with other gland extracts, or botanical and mineral medicinal substances put up in capsule form to meet the requirements of each particular case and situation, or whether he will resort to the easier way of prescribing certain stock shotgun mixtures as they are marketed by certain manufacturers. In support of the latter method the theory is advanced that the body cells have the "capacity to pick out the hormones that are needed and in the amount that they are needed" (6). Frankly, I consider this a misconception, for if it were true it would, for example, be evidently impossible to give anyone an overdose of thyroid extract, which unfortunately is not only true but all too frequent. Of course, it is nearer the truth in the case of normal healthy individuals, but the physician is not called on to prescribe for them.

The effect of endocrine extract therapy is threefold: Homostimulative, heterostimulative, and substitutive. When you introduce thyroid gland extract into the human body you stimulate that individual's own thyroid gland to a changed activity, and, further, you stimulate those other endocrine glands which are especially associated with his thyroid mechanism. On the other hand, when a cure of cretinoid states has been accomplished by thyroid extract feedings, the therapy has been substitutive. This is my belief, and it is the tripod upon which I base all my efforts of endocrine extract therapeutics.

Further, it is probable that most of the benefits obtained with endocrine extract administration are the result of qualitative changes in the individual's own endocrine organization, and in those cases where the results are due to quantitative endocrine introduction, it is fair to assume that the individual's own gland is the seat of considerable organic change.

(To be concluded.)

Editorial Articles

FROM THE PUBLISHERS.

With this number the New York Medical Journal makes its bow to the medical profession in its new form.

On July 12, 1900, we purchased the New York Medical Journal from Messrs. D. Appleton & Company, the New York medical book publishers. On June 8, 1903, we purchased the Philadelphia Medical Journal, which was published with success by a group of the leading physicians of Philadelphia and had attained a very large circulation. On October 12, 1905, having acquired the Medical News from Messrs. Lea Brothers & Febiger, one of the oldest medical book publishers in America, who founded it in 1843, all three journals were combined under one head—The New York Medical Journal. Thus for seventy-eight years it has forged ahead, and these are the foundation stones on which the present Journal has been built.

We feel certain that no medical periodical has made greater progress than the New York Medical Journal in its endeavor to bring before the medical profession the character of material that is so important to them in their daily practice. It has always been our ambition to present to our readers in an unbiased manner the latest findings in medicine and surgery; for we are convinced that an independent journal can always maintain a broad and fearless policy.. A journal thus conducted does not attempt to dictate and cannot be swayed; and this course will be maintained, so that the Journal will steadily grow in favor and in circulation.

In the future the New York Medical Journal will be published on the first and third Wednesdays of each month. Many of the departments will be enlarged; the special numbers, in which are grouped the latest findings by men in the various branches of medicine, will be continued, as these numbers have aroused wide interest in medical circles. The book review department, recently established, has created much favorable comment; the series of Physician Author editorials; the editorials on timely topics, and the many other departments have been so highly commended that we have reason to feel proud of the great progress the Journal has made in all its years of usefulness.

We take this occasion to extend our thanks to the many thousands of readers who have expressed their appreciation of our efforts, and also to thank our contributors for their loyal support in bringing the Journal up to its present high standard.

A. R. ELLIOTT PUBLISHING CO.

NONSURGICAL METHODS OF TREATING EXOPHTHALMIC GOITRE.

Operative measures are at times advised in cases of exophthalmic goitre, at any rate in certain cases, and surgeons who specialize in operations of this nature report most excellent results. The statistics of the Mayo Clinic in America and of Mr. James Berry in England go to show that these claims are founded on a solid basis, albeit it may be said that, of course, statistics are not infallible.

Mr. James Berry, at a meeting of the Section in Surgery of the Royal Society of Medicine held on January 5th, last, contributed a paper on a further series of five hundred goitre operations, with special reference to the afterresults of the five hundred cases; all but fourteen had been traced, and Berry said that from a study of these fourteen cases he had no reason to suppose that the afterresults were anything but satisfactory. With regard to the immediate cause for operation Berry stated that in more than half of the cases of this series operation was performed for dyspnea. Mr. A. J. Walton who took part in the discussion on this paper considered that operation was the treatment for exophthalmic goitre of longer standing than about six months, and this is, perhaps, the opinion of a goodly proportion of surgeons who specialize in this form of operation.

But there is another side to the question, and many medical men declare that operation is more or less frequently performed when therapeutic and other measures would have had a better and more lasting effect. Of this number is Dr. Thomas Bodley Scott, who, in *The Prescriber,* January, 1921, gives reasons for the faith that is in him. In the first instance, he takes a tilt against the custom of giving a disease a name, terming exophthalmic goitre Graves's disease or Basedow's disease, stating that in his opinion to get anything like a clear view of this complicated and interesting disease, all names and labels must be discarded and attention paid to origins exclusively.

Dr. Scott then goes on to describe in detail the symptoms which he attributes not only to functional failure of the thyroid gland, but to errors of function of the parathyroid, quoting Rudinger in support of the view that under normal conditions the function of one gland is controlled by the other. Also he holds that the suprarenal is involved and recommends the administration by mouth of suprarenal extract and parathyroid extract. Dr.

Scott's plan of treatment of exophthalmic goitre is as follows: 1. Find out by every means at one's command the initial fault and remove it as far as possible. X rays will help much so far as abdominal faults are concerned. 2. Rest can never be more than a compromise; the nervous affection is all against it and with a pulse rate of 120 to 140 it is more of an aspiration than a reality; but if by comparative rest the pulse rate can be lowered five beats a minute, much is gained. 3. Suprarenal extract if the blood pressure is low, one grain of dried extract three or four times a day. 4. Parathyroid extract always, in addition to anything else one may be giving. Full doses are needed; one quarter grain of the dried extract three times a day is generally sufficient, but the dose may be increased gradually.

Finally, the writer records his belief that thyroidectomy is unphilosophic, unscientific, and in most cases unnecessary. This appears to be an extreme medical view, as there is no evading the fact that operative measures have frequently had most satisfactory results. No doubt cases for operation should be carefully selected, and perhaps the statement of Mr. A. J. Walton quoted above, that operation is the treatment for exophthalmic goitre of longer standing than six months, may be regarded as the extreme surgical view. It is more than likely that there are many cases of exophthalmic goitre which are better adapted for medical than surgical treatment.

Although there is yet much to be learned as regards endocrinology, endocrine therapeutics are making headway and it is no exaggeration that when more is known concerning the internal secretions and when the subject is established upon a strictly scientific foundation, treatment of this kind will be more generally used. In the meantime surgery will play its beneficent part in the treatment of exophthalmic goitre and so will medicine.

THE PREVALENCE OF ENCEPHALITIS LETHARGICA.

Encephalitis lethargica, on account of some of its symptoms, has been incorrectly denominated sleeping sickness. The latter disease, as is well known, is a tropical disease occurring in certain parts of Africa, notably in Uganda, the host and propagator of which is the tsetse fly. Encephalitis lethargica is a distinct disease from sleeping sickness and has been recognized as an epidemic since 1918. Although its symptoms are well known to the medical profession, these facts may be recapitulated. The later stages of the disease are often very prolonged and sometimes, perhaps more frequently than not, accompanied by facial and ocular paralysis, marked paresis, and sometimes general paralysis of a limb or limbs.

For a short period the higher faculties are likely to remain distinctly impaired, resulting in a loss of memory, defects of speech, mental lethargy, and a general loss of intellectual tone. It is the occurrence of mental lethargy which has led to this disease being wrongly termed sleeping sickness. It was thought not unlikely that it bore a relation to influenza because it followed somewhat closely the influenza epidemic of 1918, but so far as is known up to the present, it is neither a manifestation of influenza nor is it dependent upon it. Indeed, the malady has appeared on several former occasions and many years have elapsed since it was first described in medical literature.

The interesting characteristic of the disease now is that it is making its appearance all over the world. This point has been established beyond peradventure by the Committee of the Office International d'Hygiene Publique, Paris, 1920. This committee makes the following statements:

In France, three hundred and twenty-one cases had been reported, the deaths being about thirty per cent. In Denmark fifty-eight cases occurred since July, 1919. The question of the disease was referred to by delegates from Portugal, Poland, Morocco, Belgium, Spain, and Algeria. In Italy over four thousand cases, resulting in one thousand and eighteen deaths, had been reported; of the cases notified in England and Wales during 1919, no fewer than two hundred and eighty-six proved fatal, a death rate of fifty-four and six tenths per cent. The disease also made its appearance in various parts of this country, and in September, 1918, in New York.

It may be further stated that encephalitis lethargica is no respecter of persons or age. It attacks all classes of persons of all ages. It is not an epidemic in the strictest sense of the word, that is to say, not like smallpox or measles in the strength of its infection. The disease is a winter one, judging from the most recent figures and notifications. In 1918 it was made a notifiable disease in England, where the Ministry of Health, by the agency of medical officers of health and practitioners, are conducting inquiries into many notified cases. No doubt carefully carried out investigations in different countries as to the obscure features of this disease will clear up some, at least, of its puzzling points. It appears to be at its worst in Italy and England and it is encouraging to learn that in the latter country vigorous steps are being taken by the Ministry of Health to solve the problem.

PHYSICIAN AUTHORS: CHARLES JAMES LEVER.

"If this sort of thing amuses them, then I can go on forever," said Dr. Charles James Lever, astonished by the instantaneous success of his first novel, *The Confessions of Harry Lorrequer*. This marked the beginning of the end of Lever's career as a physician. It was in 1839 that *Harry Lorrequer* came out, after having run serially in the *Dublin University Magazine*. Lever had been practising medicine eight years (he got his medical degree in Dublin in 1831), but he never seemed to have been cut out for a physician. He liked medicine well enough, but he liked cards, horses and high and fast living better. With him these were more than luxuries. They were necessities. But as a rule they are not compatible with medical success. Lever discovered this early in his career as a country doctor in Ireland, where he was unable to hold positions under the Board of Health of the County Clare. "The liveliness of his diversions," his biographers tell us, "seem to have prejudiced the authorities against him." And yet, on great occasions he could live up to the best traditions of his profession. Immediately after he got his degree he plunged with splendid courage into the midst of a cholera epidemic and worked faithfully until the disease had been wiped out.

During his eight years as a physician he practised in various parts of Ireland and in Brussels, where he went in the hope that he would be appointed physician to the British Embassy. This was a vain hope, but Lever was in his element; his liveliness was more appreciated, there was more scope for his conviviality. The city was full of slightly soiled English society and half pay officers who had fought under Wellington—an equally convivial set. It was a rich field for any literary man to work in, and Lever, in need of the money, was not slow to develop it. A physician's income sets limitations on liveliness, and one does not have to have a prize imagination to realize how welcome the royalties from *Harry Lorrequer* must have been to Lever and how joyous he felt as he saw the portals of the literary Eldorado open up to him.

He began writing at a galloping pace, never revising, paying no heed to style or form or plot, and during what remained of his life ground out more than fifty rollicking, loose jointed tales of romance and adventure. After *Lorrequer* three others followed in quick succession—*Charles O'Malley, The Irish Dragoon; Jack Hinton* and *Tom Burke of Ours*. The critics smote him hip and thigh, but the public defied the critics and Lever enjoyed great popularity, especially among men and boys.

His stories were full of roysterers, soldiers, smugglers, gamblers, worldly men and women, peasants and all sorts of odd characters, revelling in all sorts of madcap adventures. These characters were all well drawn; Lever had a keen and sure eye for character. His stories also abound in graphic descriptions and in *Charles O'Malley* and some others he did some astonishingly good military writing. The Iron Duke marvelled over it and wondered where he got his details. He got them from the original of Major Monsoon, whom Andrew Lang calls the nearest approach to Falstaff in the literature of the world.

Although Lever was born in Dublin (August 31, 1806) he was of English descent. He was educated in private schools and gave his dominies a world of trouble. "He was as gamesome and volatile a nuisance as Dublin ever possessed," says W. E. Henley. Later on, at Trinity College, Dublin, he continued to be the ringleader in all sorts of ingenuous pranks. His biographers tell us that one of his medical professors had a habit of lecturing in bed. One night the professor left town unexpectedly and Lever, by chance, learned of this, slipped into the professor's bed, put on his nightcap and took the class himself. On another occasion, he was standing outside the Foundling Hospital with a fellow student of small stature and slight build. Outside the door of the hospital there was a kind of stone cradle for foundlings, and when a baby was put in this cradle a bell rang. Lever lifted his friend, put him into the cradle and had the joy of seeing the promising infant picked out by the porter. Two years before he got his degree Lever went to Canada as an unqualified surgeon on an immigrant ship. In Canada he plunged into the backwoods, became affiliated with a tribe of Indians and, after a short time, had to flee for his life as the result of some mischief. His Canadian and shipboard experiences are related in *Con Cregan, Arthur O'Leary* and *Roland Cashel*.

Lever definitely gave up medical practice in 1842, when he went back to Dublin from Brussels to edit the *Dublin University Magazine* and write exclusively for it. It was there he met Thackeray, on his Irish tour, and the two became fast friends. Thackeray's *Irish Sketch Book* is dedicated to "My Dear Lever." But that did not stop Thackeray, and Bret Harte, too, from burlesquing the physician's novels. Lever's editorship lasted three years, after which he returned to Brussels and started on an unlimited tour of central Europe in a family coach. Meanwhile he kept on writing novels at a furious pace and living high and in time his health began to fail. Seeking a climate which would be beneficial, he settled in Florence and wrote several books there. In 1857 he was appointed British consul at Spezzia, Italy, where he wrote a dozen novels. After ten years Lord Derby promoted him to Trieste, saying: "Here's six hundred pounds a year for doing nothing, and you're just the man to do it."

Lever's health declined rapidly in Trieste. This and the death of his wife, to whom he was greatly devoted, brought on depression. Outworn in body, he died of heart failure in Trieste on June 1, 1872, a few months after he had returned from a farewell trip to Ireland. Despite the large amount of money he had made, he died in straitened circumstances. Almost up to the last, however, he continued to write. His later stories lacked the wild enthusiasm of his earlier work. They contained less fighting, were almost devoid of delightful anecdotes and had no rollicking songs. They were not the merry medleys of his younger days. His change in style was somewhat due to the critics. He had long had an idea that he was the victim of a reviewers' conspiracy. Although Lever's posthumous popularity has dwindled considerably, it is by no means played out, and likely never will be. "Lever lived in an age so full of great novelists that, perhaps, he is not prized as he should be," says Andrew Lang. "Dickens, Bulwer, Thackeray, Trollope, George Eliot, were his contemporaries. But when we turn back to read him once more, we see that Lever, too, was a worthy member of that famous company—a romancer for men and boys."

INVENTIONS AND THE PUBLIC HEALTH.

It is interesting to contemplate the effect which inventions have had on the public health, effects which for the most part are accidental byproducts which in many cases could not have been foreseen. For the most part the effect is good; in fact, there is scarcely a basic invention which has not directly or indirectly improved public health, frequently by unsuspected circuitous routes. Who would have thought that the automobile, by crowding the manure spreading horse out of cities, would have reduced the amount of tetanus and typhoid fever, or that the introduction of steam donkey engines would almost abolish aneurysm among sailors? Sometimes the effect is not so good—for example, the spread of pellagra following the use of machine milled rice, and the occurrence of various forms of dermatitis from aniline dyes. The linotype machine, though, has put an end to printers' antimony poisoning, zinc paint has prevented much painters' colic, and, according to Carter, the crowding out of the sailing ship by the steamer has had much to do with the eradication of yellow fever.

What will be the effect of the increasing commercial use of aircraft? No one at present can accurately forecast, but the governments of the United States and the Panama Canal have both promulgated regulations which require quarantine inspection of air vessels. That airplanes should be the means of transmitting disease on a large scale is not to be expected, but it is quite reasonable to suppose that passengers in the incubative stage of yellow fever might be introduced into infectible territory by this means and thus give rise to an epidemic. It is expected that those countries whose other means of transportation are slow and difficult will turn to aircraft as a rapid, easy method of conquering distance, e. g., the projected airplane service between Barranquilla and Bogota, Colombia, and disease may be spread in this way. If, however, aircraft follow the rule of other basic inventions, the good which they will do the public health will more than compensate for the minor rôle which they will probably play in the spread of disease.

THE PROBLEM OF ALASTRIM.

Given a disease which looks like smallpox but does not umbilicate, which spreads like wildfire yet has a mortality rate approaching zero, whose eruption comes out in a succession of crops but which is not chickenpox, which is modified by vaccination but whose unvaccinated convalescents may be vaccinated, a disease against which an attack of smallpox does not protect and which does not protect against smallpox, and you have some problem. That epidemiological enigma is called by a variety of names, alastrim, Amaas, West Indian modified smallpox, and pseudosmallpox, and is distributed in the Caribbean littoral, Brazil, the Mediterranean area, South Africa, Great Britain, and more recently in Canada. On the island of Jamaica alone several thousand cases have occurred since July, 1920. From the viewpoint of public health the disease is smallpox, yet it does not seem to increase in virulence, to become hemorrhagic, or to produce definite scarring. Economically it is a serious disease, because so many workers are placed in enforced idleness by it, yet few save feeble infants and pregnant women die. Microscopically the findings in alastrim are much the same as in smallpox, yet whether it is an attenuated form of the parasite or the Cytorcytes variolæ in a hemicyclical phase is undetermined.

All of this is by way of saying that our knowledge of the exanthematous epidemic diseases is remarkably sketchy, and that there is an acute need for some active scientific research to the end that the vesicular and pustular communicable diseases may be accurately classified. Until this is done, control measures must of necessity be conducted on an empiric basis, an inaccurate, expensive and unsatisfactory method for procedure which misses quite as often as it hits. In the meantime, alastrim must be considered closely related to smallpox and reported and handled as such.

News Items.

Health Work in Alabama.—The International Health Board has appropriated $25,000 for malaria control work in Alabama during the year 1921 and for the establishment of additional county health centres.

Malaria in Russia.—According to cable dispatches from Moscow there are at present 10,000,000 cases of malaria in Russia, and the mortality is said to be three per cent. of those stricken by the disease.

Eugenic Law in Oregon Extended to Women.—On February 19th the Oregon Legislature passed a bill requiring women as well as men applying for marriage licenses to be examined as to mental and physical fitness. A law requiring the examination of men is already in force in Oregon.

New England Woman's Medical Society.—Dr. Florence Duckering was elected president of this society at its annual meeting held recently in Boston, and other officers were elected as follows: Dr. Maud Corvill, vice-president; Dr. Alice H. Bigelow, secretary; Dr. Margaret Kleinert, treasurer.

Endowment Fund Asked for Johns Hopkins Hospital School for Nurses.—An appeal for an endowment fund of $1,000,000 is to be made shortly by the alumnæ of the school. A committee has been appointed to carry on the work, and several contributions have already been received.

Cornell Women's Club.—At the annual meeting of this club, held on Saturday, February 19th, announcement was made that the club had raised its $33,000 portion of the $10,000,000 Cornell endowment. Dr. Helen L. Young is president of the club, Dr. Mary M. Crawford, vice-president, and Mrs. H. D. Williams secretary.

American Congress on Internal Medicine.—The fifth annual session of the American Congress on Internal Medicine was held in Baltimore, Md., February 21st to 26th. The activities of the congress were largely clinical. Laboratory demonstrations and clinics were held daily by members of the medical faculties of the Johns Hopkins and the Maryland universities.

Twenty Thousand Children Killed Yearly in Accidents.—According to statistics prepared by the Red Cross Society 20,000 children up to the age of fourteen years lose their lives in accidents every year in the United States. These figures show that 167 out of every 1,000 deaths of children between the ages of five and nine are due to accidents, while between the ages of ten and fourteen the ratio is 177 to the thousand.

Forty-fifth Anniversary of Johns Hopkins University.—During the past week Johns Hopkins University celebrated its forty-fifth anniversary. Fifteen diplomas were presented. Among the graduates is Miss Florence Powdermaker, of Baltimore, the first woman to receive the degree of Ph.D. for research work in biochemistry in the new School of Hygiene and Public Health. The degree of M.D. was conferred upon six graduates and the degree of Doctor of Public Health upon two, one of whom came from the Philippine Islands.

Influenza in Japan.—According to reports received by the United States Public Health Service in Washington, D. C., during the hundred day period from October 23, 1918, to January 31, 1919, more than three million cases of influenza with sixty thousand fatalities occurred in the three principal cities and twenty-four provinces in Japan.

Associate in Clinical Psychiatry and Psychotherapy.—The United States Civil Service Commission announces an examination for associate in clinical psychiatry and psychotherapy to fill a vacancy in the staff of St. Elizabeth's Hospital, Washington; salary, $2,500 a year and maintenance. Applications will be received by the commission up to March 29th.

Protein Sensitization Tests.—A series of experiments in protein sensitization are being conducted at three Boston hospitals. The patients are inoculated with proteins from foods and other substances and the subsequent cutaneous reactions, or absence of reactions, indicate whether these proteins are friendly or hostile. The research has been applied especially to the study of causes of bronchial asthma and hay fever, but will be extended to other diseases.

Medical Society of the State of New York.—The 115th annual meeting of this society will be held in Brooklyn, May 3d, 4th and 5th, under the presidency of Dr. J. Richard Kevin. The House of Delegates will meet on Monday, May 2d, in the Kings County Building, and the various sections will meet in the Twenty-third Regiment Armory. Dr. Edward Livingston Hunt, of New York, is secretary of the society, and Dr. William Francis Campbell, of Brooklyn, is chairman of the committee of arrangements.

Appropriation of $200,000 to Fight Typhus.—On February 18th the United States Senate voted an appropriation of $200,000 to be expended by the Public Health Service in equipping the quarantine station at Rosebank, Staten Island, for the proper handling of the immigration problem at the Port of New York. The following medical officers of the Public Health Service have been ordered to duty at the quarantine station: Past Assistant Surgeon A. W. Scott, ordered to Rosebank; Assistant Surgeon R. E. Porter, to Ellis Island; Surgeon A. H. Holler and Past Assistant Surgeon M. A. Stark to the Fox Hills Hospital.

Parkin Prize of the Royal College of Physicians of Edinburgh.—In terms of the bequest made to the Royal College of Physicians of Edinburgh by the late Dr. John Parkin, fellow of the college, a prize is offered for the best essay on certain subjects connected with medicine. The subject of the essay for the present period is, in terms of the deed, "On the effects of volcanic action in the production of epidemic diseases in the animal and in the vegetable creation, and in the production of hurricanes and abnormal atmospherical vicissitudes."

The prize is of the value of £100 and is open to competitors of all nations.

For further particulars concerning the terms of the competition address the secretary, Dr. J. S. Fowler.

Killing to Live.—The brute creation can urge that hunger and selfpreservation prompt all their killing, except perhaps in the matter of a few private quarrels. Man kills them to save being killed himself, to clear a country of danger, to get skins and feathers, to stock a museum with new creatures, or for food or for fun. The snakes in India last year killed 20,273 persons; the tigers 1,162; leopards 469; bears 118; elephants 60; hyenas 33. Common diseases, riots, epidemics, starvation, fill up a big cup of misery for India.

Kings County Medical Society.—Lieutenant Colonel Fielding H. Garrison, Medical Corps, U. S. Army, was the principal speaker at the regular meeting of this society held last week in Brooklyn, under the presidency of Dr. Arthur H. Bogart. Dr. Garrison was introduced by Dr. Harvey B. Matthews, president of the Medical Library Association of Brooklyn, and Community Interests from the Viewpoint of the Medical Library was the subject of his address. Dr. John E. Jennings read a paper on Operation and Prognosis in Cancer of the Breast, illustrated with lantern slides. Several new members were taken into the society. A committee was appointed to direct a campaign to enroll five hundred members during the year.

Medical Society of the County of New York.—A stated meeting of the society was held in Hosack Hall, New York Academy of Medicine, Monday evening, February 28th, under the presidency of Dr. George Gray Ward, Jr. The scientific program consisted of a symposium on cancer of the rectum. Dr. Charles A. Stockard read a paper on Cancer Growth in the Light of Embryonic Growth; Dr. Jerome M. Lynch presented a paper on Some Factors to be Considered in the Surgical Therapy of Cancer of the Rectum. Dr. Isaac Levin presented a paper on the Relation of Radium and Röntgen Therapy to Surgery in Cancer of the Rectum. The subject was discussed by Dr. Joseph A. Blake, Dr. James Ewing, Dr. Robert Abbe, and Dr. Albert A. Berg.

Personal.—Dr. Stephen Smith, New York's oldest physician, celebrated his ninety-eighth birthday on Saturday, February 19th.

Professor James Rowland Angell has been elected president of Yale University, succeeding President Arthur T. Hadley, who resigned about eight months ago.

Madame Curie, the discoverer of radium, will visit the United States in May. Dr. Francis Carter Wood, of New York, is chairman of a reception committee composed of prominent physicians engaged in radium work.

Dr. Eli K. Marshall, professor of pharmacology of Washington University, St. Louis, Mo., has been elected professor of physiology at the Johns Hopkins Medical School, Baltimore, and will assume his new duties on July 1st.

Dr. Victor C. Vaughan, dean of the University of Michigan for the past thirty years, has tendered his resignation, to take effect at the end of the present academic year. Dr. Vaughan has been connected with the medical faculty of this university for forty-five years.

Post-Graduate Medical School Scholarships.—The New York Post-Graduate Medical School and Hospital announces that there will be available this year six scholarships under the terms of the Oliver-Rea endowment. The purpose of the endowment is to award scholarships to practising physicians of the United States to defray in full the expenses of tuition at the New York Post-Graduate Medical School. According to the wishes of the donor, physicians in the State of Pennsylvania will receive preference in the award of these scholarships. Applications may be sent to the president of the New York Post-Graduate Medical School and Hospital, Twentieth Street and Second Avenue, New York.

Repeal Law Providing for Registration of Drug Addicts.—The following statement was issued by Commissioner Walter R. Herrick on February 10th:

> Special Rules and Regulations for the City of Greater New York having been promulgated by me taking effect June 25, 1919, providing for the registration of all drug addicts in and for the City of Greater New York pursuant to the authority conferred upon me by Chapter 639 of the Public Health Law, article 22, section 421 thereof; and the necessity for such registration having been eliminated by regulation No. 12 of the new rules and regulations of this Department prohibiting the use of unofficial blanks by physicians issuing prescriptions for or administering or dispensing cocaine, opium or their derivatives and by regulation No. 16 requiring data concerning prescriptions for habitual users to be inserted on the official blanks, I, therefore, hereby revoke and repeal the aforesaid Special Rules and Regulations for the City of Greater New York requiring the registration of all drug addicts promulgated on June 25, 1919, to take effect February 14, 1921.

Died.

Black.—In Hot Springs, Va., on Monday, February 14th, Dr. Robert Alexander Black, of Brooklyn, N. Y., aged sixty years.

Boisvenu.—In Providence, R. I., on Friday, February 4th, Dr. Philias H. Boisvenu, aged forty-nine years.

Bolink.—In Seattle, Wash., on Sunday, February 6th, Dr. Elbertus Bolink, aged seventy-six years.

Brady.—On board Steamship *Suriname*, of the United Fruit Company, in East River, N. Y., on Monday, February 14th, Dr. Elliot Brady, ship surgeon.

Burnell.—In Cos Cob, Conn., on Sunday, February 13th, Dr. John J. Burnell, of New York and Greenwich, Conn., aged sixty years.

Davis.—In Los Angeles, Cal., on Tuesday, February 8th, Dr. Theodore Garrison Davis, aged sixty-five years.

Ess.—In Massillon, Ohio, on Monday, February 7th, Dr. George V. Ess, aged sixty-six years.

Hall.—In Crisfield, Md., on Friday, February 11th, Dr. W. Fletcher Hall, aged sixty-three years.

Harvey.—In Dundee, N. Y., on Wednesday, February 9th, Dr. Cyrus C. Harvey, aged seventy-two years.

Hedges.—In Glendale, Cal., on Saturday, February 5th, Dr. Thomas M. Hedges, aged eighty-three years.

Iszard.—In Brooklyn, N. Y., on Thursday, February 17th, Dr. Walter R. Iszard, aged forty years.

Jackson.—In Madison, Wis., on Friday, February 12th, Dr. James A. Jackson, aged eighty years.

Oberholtzer.—In Reading, Pa., on Saturday, February 12th, Dr. Morris B. Oberholtzer, of Boyertown, Pa., aged forty-five years.

Roberts.—In Philadelphia, Pa., on Tuesday, February 15th, Dr. Isaac E. Roberts, aged eighty years.

LONDON LETTER.

(From our own correspondent.)

The Administrative Treatment of Tuberculosis—Voluntary Restriction of the Birth Rate in Great Britain—Lecture on Rats—Propaganda Against Consumption—Osler's Principles and Practice of Medicine.

London, *January 27, 1921.*

In a paper read before the Glasgow Southern Medical Society on December 9, 1920, Dr. A. S. M. Macgregor pointed out that the notification of tuberculosis had preceded complete arrangements for treatment, and there was consequently leeway to be made up. In 1912 Glasgow spent £4,000 per annum on tuberculosis, and in 1919 £170,000 per annum. The lines of treatment were sanatorium, hospital, dispensary and domiciliary. The results of sanatorium treatment had improved very little as the years had passed, and Dr. Macgregor quoted figures from his own experience in support of this statement. He also quoted from a recent publication of the Medical Research Committee to show that among patients discharged over a period of years from a large sanatorium in England, the death rate was sixteen times greater than that among a similar normal population. The results from sanatorium treatment, with or without the use of tuberculin, were equally disappointing. There was, however, no alternative method of treatment likely to give better results. Dr. Macgregor drew attention to the fact that the special housing conditions obtaining in Glasgow made it necessary to provide ample hospital accommodation for advanced cases. There were about six thousand cases of pulmonary tuberculosis in Glasgow, of which nine hundred were in one-apartment houses and about three thousand in two-apartment houses. The question of training in sanatoriums and the establishment of village settlements were referred to, the object of the latter being to endeavor to arrest the decline which took place when a patient returned home.

There can be little doubt that the successful treatment of pulmonary tuberculosis lies mainly in preventive measures. Early diagnosis and prompt, suitable treatment will, generally speaking, so thoroughly arrest the progress of the disease that, provided a healthy mode of life is followed, no recurrence need be anticipated. When the disease has passed the incipient stage, home treatment is of little avail, and the patient should be isolated for his own sake as well as for the sake of the community. However, preventive treatment should consist in healthy living. So long as housing conditions are as they are in Glasgow and in many large cities in all parts of the world, there is small hope of stamping out tuberculosis.

* * *

The National Birth Rate Commission's second report has been published recently, and, of course, contains some extremely valuable information. One of the most instructive sections of the report is that which deals with the voluntary restriction of the birth rate. According to the report, this is a most important cause of the birth rate's decline. It commenced with the educated and professional classes, and is now spreading through the entire community. As for the ethical aspects of birth control, the commission found some six common points of agreement. The first may be termed an obstetrical one. The report states that except under medical advice and action with a view to removing serious maternal risks, no means should be used to terminate the pregnancy when there is a possibility that conception may have taken place. This declaration shows a great advance in ethics, as antenatal life is stated to be sacred from the time of conception. Only to save a mother's life may even an embryo of a few weeks be destroyed. The second point of agreement is of a eugenic character, and is as follows: No persons who are likely to transmit any serious physical or mental taint should have children. The advice given is excellent, but how is to be carried into effect? By what means can it be determined who are unfit, and how are they to be compelled or persuaded not to become parents?

The third point is of a medical nature and reads thus: No preventive means which could injure the health of the potential parents or children should be used. This statement is somewhat vague. In the first place, in the present state of our knowledge, it is practically imposible to define the term injurious means. The fourth point of agreement is ethical, and also obviously easy of acceptance: No husband or wife should refuse the duty of parenthood for solely selfish reasons. As a matter of fact, the duty of parenthood is often refused for these very reasons, as, after all, selfishness is a predominant human characteristic. The fifth point of agreement in a question of economics, namely, that it is the duty of society to remove the disabilities which, without any fault of theirs, may be imposed on worthy parenthood. This means the endowment of motherhood, a matter concerning which the last word has not yet been spoken. It will be considered further in the next report. The sixth point of agreement is the most important, as it deals with the debatable subject—the need or necessity for educating the young in the laws of sex hygiene —debatable in that it is difficult to decide upon the best methods of imparting this information and its scope. The sixth point also treats of the prevalence and dangers of venereal disease, and of several other matters of health in relation to marriage and family life.

Some space is devoted to a consideration of the arguments for and against the use of contraceptives. Upon this matter no agreement was reached. The arguments were chiefly ethical and religious and the only medical views given were not in the report itself but in two notes at the end of the document. These notes are too long to quote but it may be said that the opinions expressed in them do not agree. On this highly important point the commission is divided, and, moreover, this division is reflected to a considerable degree in the educated classes of the nation at large, of course in the church and in the medical profession itself. It is a subject of extraordinary complexity, as it is obvious that the strictly medical point of view differs very widely from the moral. The strictly medical way of regarding the use of contraceptives is with regard to the physical injury they may cause not as to the menace to morality. However, a large part of the next report is to be given over to the consideration of the nature and mode of dissemination of the fullest and best information concerning contraceptives.

Limitation of the family from the ethical standpoint is discussed in an interesting paragraph. While parents are urged to have children for the good of the country and race, at the same time it is pointed out that the responsibility of the country to parents in the discharge of their obligations must be equally asserted and the commission suggests, as solutions of the economic and social aspects of the question of population, the endowment of motherhood and the care of the unmarried mother. But as said before, the commission recognizes that this problem is by no means easy to solve and leaves the further consideration of the endowment of motherhood for the next report.

The National Birth Rate Commission's report might be fitly termed a review of the problems of population and parenthood which present themselves in Great Britain at the present time. The conditions prevailing are set down clearly and on the whole impartially, although perhaps the views of the majority of the commission on the prevention of venereal disease will not commend themselves to a large proportion perhaps to a majority of the medical profession. Judged from the economic and social standpoints, the views of the commission are beyond cavil. The legitimate birth rate in the United Kingdom is falling persistently and in an extreme degree. It is time that *pari passu* infant mortality has greatly decreased but for a country in the position of Great Britain this is not a sufficient equipoise. In the words of the commission, "There may be conditions in which an increase of the population is not desirable, but in the United Kingdom and still more in the Empire, these conditions do not now exist."

* * *

Lieutenant Alfred E. Moore gave an address a few days ago on rats before the College of Ambulance. Through the agency of the Board of Agriculture the Government a year or more ago passed a stringent law for the destruction of rats. It was recognized that not only did the hordes of rats, which infested all parts of Great Britain and also abounded on ships, cause great pecuniary loss but were the means of conveying disease, notably plague. Although this law has been in existence for longer than a year, up to the present the public have failed to grasp its scope and significance. The object of Lieutenant Moore's lecture was to dissipate some of this ignorance. He said in part that the public did not seem to realize that the rats act affected every person. They all flattered themselves that the act applied to other people. If any person harbored one rat or mouse a fine could be inflicted. Without any warning an individual who had one of these pests in the house could be fined £5, and if the offence was continued after a warning the penalty could be £20. The reason why so few prosecutions had taken place as yet was that the Board of Agriculture was waiting until the public had become more familiar with the act. It is perhaps hopeless to imagine that the rats can be exterminated as they are extraordinarily cunning animals but at least they can be so kept down that they are little or no menace to health and of no account from the economic view point. However, there should be an international crusade against rats, to the extent that such a crusade is possible. If America and Canada, Australia, in fact the entire British Empire were, to follow Great Britain's lead and inaugurate a campaign against the destructive and dangerous rodent, real and material headway would be made.

* * *

At a meeting held in London, on January 21st, it was decided to form in the county of Kent, a branch of the National Association for the Prevention of Tuberculosis. The Marquis of Camden, who presided, in opening the proceedings stated that in 1918 the number of deaths from tuberculosis in Kent was 1,494 out of a population of 912,573. At the present time there were in the county twenty-one tuberculosis dispensaries, one sanatorium and one hospital for advanced cases. The assocation specially busied itself with propaganda and after-care work. Sir A. Stanley, head of the British Red Cross Society, said experts were emphatic in their declaration that an immense amount of tuberculosis could be prevented if only education with regard to health matters were more widespread. Hence the importance of propaganda. Sir St. Clair Thomson, the well known nose and throat specialist, in emphasizing the value of propaganda said that twenty years ago the national association could not induce any railway company to put up certain notices in their waiting rooms and passenger carriages because the word "spit" occurred in them. It was argued that the word was most offensive. In addition the companies argued that their first class passengers did not spit on the floor, and that their third class passengers would spit on the floor whether notices were put up or not. Now notices containing the word at one time objected to were put up and paid for by the railway companies themselves.

The value of educational propaganda in health matters is only now beginning to be recognized in this country. In America, publicly conducted campaigns against disease, and against tuberculosis in particular, have been conducted on more rational lines than here. To rouse the community to a sense of the menace of this or that disease, and this can be effectively done only by means of skillfully devised educational propaganda, some of these methods of educating the public may seem sensational and even somewhat vulgar, but so long as they excite the fears of those who read or observe the various modes in which such a campaign is carried on, the methods employed are fully justified. It is obvious that the man in the street would neither understand nor heed propaganda of this nature if couched in scientific language.

* * *

The Ninth Edition of Osler's *Principles and Practice of Medicine* (D. Appleton & Company) is having a great success in this country. It is convenient in size, clearly written, thoroughly up to date, and appears to meet the needs of the British medical man in the most satisfactory manner.

Book Reviews

PSYCHOPATHOLOGY.

Psychopathology. By Edward J. Kempf, M. D., Clinical Psychiatrist to St. Elizabeth's Hospital (Formerly Government Hospital for the Insane), Washington, D. C.; Author of *The Autonomic Functions and the Personality.* Eighty-seven Illustrations. St. Louis: C. V. Mosby Company, 1920. Pp. xxiii-762.

A new note has been struck in the presentation of pathological psychic states in Dr. Kempf's latest book. He has taken a firm grip on the subject and bridged the gap formerly existing between morbid psychology and physiology. He has done more; he has fearlessly invaded the realms of art and other fields of endeavor, and shown how symbolism is expressed unconsciously in the acts of everyday life. He has shown how the strivings of a lifetime can be traced to remote influences, influences of the parent, of early traumata, and early conditionings. He has shown how these conditionings may result, on the one hand, in great productive efforts, as in the case of Darwin, and in destructive tendencies on the part of a psychopath.

EDWARD J. KEMPF, M. D.,
Author of *Psychopathology.*

Kempf's most original work, perhaps, is in the study of the mechanisms of postural tensions and the origin of cravings of the autonomic apparatus. In this book he has amplified his original theories, which he first presented in monograph form. He sums up his theory of the significance of the peripheral origin of the wish or affective craving as follows: "Hunger, fear, disgust, anger, shame and love have their origin in the feelings aroused by the hypertensions or hypotensions and movements of different visceral segments, and it is quite probable that all the viscera, including the bloodvessels, give rise to an afferent or efferent stream, and the nature of the wishes we are aware of at any time is determined by the organs that happen to be hyperactive at the time and in conflict with the resisting environment, as stomach hunger for food, bladder wish to urinate, etc. The complexity of the intricate autonomic apparatus, arousing simultaneously more or less vigorous manifold cravings, fully accounts for the complicated nature of the affections of the personality. When one bears in mind the fact that all the cravings have but one means of obtaining gratification; that is, through using the skeletal neuromuscular apparatus, the basis of the autonomic affective conflict for control or domination of the final common motor path becomes obvious. It is also obvious that the affections which have control of the projicient apparatus, indirectly but irresistibly control the antagonistic, repressed affections."

Kempf builds up his book, laying his foundation on the physiological foundations of personality. Let us pause for a moment and see just what weight this has. Modern psychopathologists of the dynamic schools have been accused by the older men, those reluctant to grapple with new ideas, that the physiological aspects of life were left out of the general scheme of things. Now we have presented all of the most radical departures of psychopathology actually built up on a basis of physiology. A bit destructive to their clamoring, but constructive for active workers in psychiatry.

This section, devoted to the foundations of personality, is one of the most valuable offerings in medical literature. Here as in other sections of the book, the probing has been keen, and every detail in the unfolding and development of the human being has been meticulously considered. This chapter will have its influence on medicine, philosophy, teaching and many other branches of learning, and indirectly upon human conduct in every field of human endeavor. It is bold, it is sweeping, and, most important of all, little as we care to face the situation, it is true!

The psychology of the family is then taken up, and many obscure conditions are brought to light. Usually, in books on psychopathology, this complex situation is not discussed. It is usually referred to vaguely as the environmental condition or the influence of bad surroundings, and other noncommittal terms; but here we see why a husband in a certain situation will respond in a certain way, and how children conditioned in a specific way will compensate and react. We have shown how cravings have manifold and vicarious outlets, constructive as well as destructive. We are shown the rôle frequently played by the teacher. Flirtations, flattery, competitions, fixations, parricide, homosexuality, erotic parental influence on children, and countless other familiar difficulties are discussed in a manner to bring on an awakening at least.

Then slowly, with a new concept and a somewhat new terminology, the various psychopathologies are brought to light and explored. He shows that by probing deeply enough and with care many of the socalled incurable conditions can and have been cured.

This book should be widely read. It contains material that is new in the realm of psychopathology, much that is new and fundamental; but it also contains a basic concept of the human emotions that is going to influence our concept of the human emotions. Old theories based on surface reasonings will be discarded for these more fundamental ones, and it will be well for all who are interested in the mental illnesses of man to study these new concepts. All who are interested in the prevention of many psychic disorders which add to the burdens of man; all who are interested in a better understanding of self and how profoundly they have been influenced by their unconscious cravings and conditioned by the surroundings will find food for thought in this book.

Art has a powerful searchlight thrown upon it, and we are shown reproductions of symbolic significance revealed in sculpture and painting. Some of the studies are obvious enough, while others have erotic sexual symbolization cunningly concealed by intricate workmanship. Examples are given of phallic and vulvar symbols, of sexual union and sexual attachment to parents or children, of heterosexuality and homosexuality, of autoeroticism and regressions of compensations and defenses.

In many places Kempf's writing is vivid, and he hurls broadsides at certain regressive practices, institutional and civic, which would do justice to a Bernard Shaw or a Voltaire. If the average educator would have the patience to read the more technical parts of the book, he would be rewarded, perhaps, too, he would be shocked, before he finished. One day, however, the book will reach these people, if not directly, then indirectly, by giving courage to others that they may carry on.

It is encouraging to find work of this type being done here in America. It has generally been ceded that in Vienna, Zurich, and London vast strides have been made in the field of psychopathology, but with the publication of works like this of Kempf's, it may safely be stated that America is making contributions, is forging ahead, making use of the sum total of the findings of the old world, and giving them something in return that they may enrich their fund of knowledge for a greater usefulness.

ENDOCRINOLOGY.

The Endocrines. By Samuel Wyllis Bandler, A. B., M. D., F. A. C. S., Professor of Gynecology in the New York Post-Graduate Medical School and Hospital. Philadelphia and London: W. B. Saunders Company, 1920. Pp. viii-486.

There was a need for a good textbook on endocrinology. Much new work is being done, some of a lasting character, yet on the whole we know very little about it, and realize full well that a great amount of study and research will be required to bring a small portion of the vast amount of buried material to the surface. Bandler, after an apology in his preface, enters into this complex field and hammers out one dogmatic statement after another. The man who has done work in this field of endeavor will not be harmed by the many fantastic and groundless theories and the blind, futile attacks made upon proved medical facts. On the other hand, the practitioner who reads the book, depending upon the statements made therein, believing them to be the result of corroborated material worked together by clear thinking, may come to grief.

It is lamentable to find a worker who shows an apparent effort at progress in some lines so completely reactionary in many others. Careful reading of this rather ponderous yet carelessly prepared book will disclose the candidate for election going forth to the campaign with the blare of trumpets and waving of banners . . . and then, after election . . . hollow theories interspersed with a few facts. We are told that we must be frank and truthful with children so that their impressionable minds will not be cluttered with false notions created in their fantasy or gathered in the street. We are told that we must tell them the truth, but I will let the author give his version of what he considers proper, or what he considers the truth: ". . . Now a cow, when it has a calf, lays an egg; but if a cow were to sit on such an egg the shell would break and it might crush the little calf. Besides, the cow has to eat its food, stand under a shady tree in warm weather, wander about the pasture and give its milk. Therefore, Nature arranged it so that when the cow lays its egg, the little calf is ready for immediate hatching." This is a good start for a new textbook. An appropriate title would be *Mythical Biology for Children.* It is difficult to see just what he is driving at in attempting to defend the respectability of the bovine race by having them come into the world shielded by an egg shell. Is it more fitting for the cow to lay an egg than to give birth to a calf? Dr. Bandler seems to think so, otherwise why tell this select version of the truth to children? How much confidence will the child have when it finds out from a more accurate teacher that calves manage to get into the world nude and unashamed?

To the reader of this review it may seem somewhat unfair that this point is taken up in such detail, but great emphasis is placed upon it in the technic of truthful instruction for children, and it is again emphasized as follows: A boy of ten, after seeing the picture of a bitch being delivered by the aid of forceps, showed it to Dr. Bandler. "I was startled for a moment, and said, 'Why, of course, if the egg won't come out of its own accord, the veterinary takes the little puppy out of the shell himself. Didn't you know that?' This was the only thing to do and was the proper thing to do, though had I known I would not have put the pamphlet in his hands at that time." Again, we find in response to a query from a young miss of nine, which is far more intelligent than the mystic explanation given, "You know the calf lays an egg, but the little calf comes right out of the egg as soon as it is laid. It's just the same way with any mother; it's all just in the laying of an egg, and the larger the little ones, the greater the danger of hurting them if the mothers were to sit on the eggs." He tells his readers that the child's curiosity has been satisfied; a wholesome explanation given; one which is perfectly true and correct and no suggestion has been put into the child's mind that the question involves anything which she has not a right to know and understand.

This all seems like a needless balderdash and half truths where the whole truth would do no harm. It is just a new cloak for the old myths, perhaps a shade nearer fact, just enough to ease the conscience of the parent trying to face responsibility; just enough away from the old puritanical silence to enable the parent to hold his head high and tell the world how he is facing the problems of life in a radical straightforward fashion. A good start but a deplorable end, especially all this hocus pocus of egg shells. No, egg shells won't do. Cow's, dogs and humans give birth to babies, not eggs. If you have not the courage to tell them so, stick to the old story of the stork and the doctor's black bag; it is more picturesque. There is enough hazy biology in the parts devoted to the endocrines. It is not so unpardonable to present it here, for the physicians who read the book can use their own judgment and have resource to other sources of information. They are not helpless like the defenseless child who depends for its information upon its elders. It expects the truth and will never forgive you when it finds that it has been deceived.

A goodly portion of the book is devoted to so-called psychiatry and neurology. Obsolete textbooks long since buried have been exhumed and brought to light but not to life. Instinct, emotions, mental and psychic states, and many other words of import lose their meaning in the jumble. The neurologist and alienist are accused of being deeply concerned with psychology. How thoughtless of them! Do they not realize that this is not the domain of the endocrinologist? Then the Freudians get a sound trouncing for not taking "note of the associated and innumerably varied endocrine stimulations and activities in different persons." If the Freudians could be accused of writing textbooks on psychiatry with so little accuracy as this textbook on the endocrines, then it would be fitting to haul them over the coals. Evidently Bandler's information on the work done by Freudians is a bit hazy. He reveals this confusion again and again, and as the result of his misconceptions challenges them to combat. It is hoped that he has more information in reserve for the fray than is revealed in his book.

A new concept of infantile psychology is offered. The erogenous zones have a diffuse and lengthy explanation. A simpler and more accurate one would serve. He speaks of delving into the hidden and often forgotten accidents, not alone of the conscious but of the unconscious. But beware of the Freudians! This in spite of the stress they place on just this phase of psychology. It is facile to grant the connection between the emotions and the endocrines, but not in the fanciful cart before the horse or cart without a horse fashion presented in this book. Speaking of emotions, which Bandler confuses with autonomic cravings, he states "the posterior pituitary plays a relatively greater rôle in women than in men. Its action is associated with the tender emotions and with the sex instinct in women; and so far as the tender emotions are concerned plays, of course, a much more important normal rôle in women than in men." This is somewhat confusing, to say the least. Again Dr. Bandler must have access to material which workers like Stekel, of Vienna, have not been able to uncover, for he states: "There is in woman no such mechanism producing the consciousness of sex urge as man has in his testes, vas deferens, and seminal vesicles. The combination of testes and adrenal cortex makes man more brutal, more criminal, and more coarse." Some advantage in being a woman, according to Bandler. Then the thyroid is an excellent gland, for "It is a great fixer of impressions for all things in the sphere of memory, especially for all things not associated with those instincts and emotions which are specifically associated with the activity of other endocrines."

We could go on and quote one amusing statement after another, but we must recall that this is supposed to be a textbook, and a certain amount of decorum must be maintained. Again and again the Freudians are accused of having done harm by emphasizing the sex instinct, when in fact they have only revealed those things hidden in the unconscious and which so many worthy men try to cover up, if not by symbols, by egg shells. We are told that, under ideal conditions, dreams do not occur. Another plea for normalcy, if true, but alas! the evidence refuses to hold down the balance. We are told that veronal in very small doses is an excellent drug for hyperthyroidism, for it puts the endocrines in a state of diminished activity. His whole idea of the physiology of sleep is archaic. In speaking of the balance of the endocrines, he proposes a solution of problems of a farreaching forensic character. "When the next war comes, if it does at all, the soldiers before going over the top will not be given alcohol; they will be given endocrine cocktails and the adrenal cortex will be an important ingredient." Why wait for the next war? Prohibition is here. Why not bring on the cocktails which we are told will serve to replace alcohol? Then again we are told: "And if the world, in the near future, administer to its diplomats, to its highest officials, to its legislators and to its people, the proper endocrines, especially the anterior pituitary, and inhibit the adrenal cortex a little bit, there may be no wars." Among the cases quoted in the latter part of the book these two groups are not found.

A good textbook on the endocrines would be welcomed by the medical profession.

PHARMACOLOGY.

Pharmacology. By Douglas Cow, M. D. (Students' Synopsis Series.) Illustrated. London: J. & A. Churchill, 1920. Pp. 132.

The terms, the names which, of course, "every student knows," are repeated over and over by the learned professors at lectures until, for the time being, every student does know. But, the examination over, real, practical work begun, old notebooks are reopened and the puzzled student asks himself the meaning of that which he once fluently repeated. Dr. Cow dedicates his book to "the great army of medical students, some eighty per cent. of the whole, who, in examination, are within measurable distance of the Rubicon which divides the approved from the rejected." His little book is helpful, and would be more so if the derivation of each term had been given. An undissected word, an unknown one, is quickly forgotten by those who have small Greek and less Latin. We all know how easy it is to remember nicknames. They designate the doings or the looks of the person. So, too, the worrying terms in pharmacology, when understood, give personality to the word and fix it in the memory. In the second edition of this useful volume, through derivations given, it is to be hoped its usefulness will be increased tenfold to the student who only thinks he knows what he knows he does not know.

GONORRHEA IN THE MALE.

The Systematic Treatment of Gonorrhea in the Male. By NORMAN LUMB, O. B. E., Author of *The Urethroscope in the Diagnosis and Treatment of Urethritis;* Late R. A. M. C., Specialist in Venereal Diseases, and Officer in Charge of Division 39 and 51 General Hospitals, B. E. F.; Clinical Assistant, St. Peter's Hospital for Stone. Second Edition. Philadelphia and New York: Lea & Febiger, 1920. Pp. viii-123.

Lumb has made a laudable, though hardly successful, effort to cover the subject of gonorrhea and its complications within the confines of a small pocket size volume. He has evidently had much experience, but it is doubtful whether his conclusions in the matter of diagnosis and treatment will meet with approval on this side of the Atlantic. The author shows an unhappy tendency to omit American names, whether it be in connection with the urethroscope or the five glass catheter test. European authorities are mentioned most freely, however. The style of the text is loose and careless, and we are expected to unravel such expressions as "it is rare, in such cases, for there to be insufficient discharge for this" (page 28).

Considerable space is devoted to the treatment of acute gonorrhea by mixed stock vaccines, containing a hundred and fifty million staphylococci and fifty million gonococci to the c. c. The author claims for this treatment most satisfactory results. Three advantages are mentioned: The speedy disappearance of discharge and pain on micturition, diminished liability to complications, and a sound test of cure (freedom from active signs). Irrigations with potassium permanganate, rest in bed four days, and a milk diet, are important adjuvants to the treatment. "Towards the end of the second week of treatment, when the discharge is but slight," we are told, "a straight bougie (metal) is passed, and the urethra gently palpated." It is doubtful whether American urologists would sanction this heroic method of diagnosis, two weeks after an acute onset. There is a conspicuous absence of any mention of the surgical treatment of vesiculitis and epididymitis, as developed by American urologists in the past decade. On the whole, the volume is one that will hardly meet the needs or the tastes of American students or practitioners. They demand more accuracy.

SYPHILIS.

Syphilis. By LOYD THOMPSON, Ph. B., M. D., Physician to the Syphilis Clinic, Government Free Bath House; Visiting Urologist to St. Joseph's Hospital; Consulting Pathologist to the Leo N. Levy Memorial Hospital, Hot Springs, Arkansas, etc. Illustrated with Eighty-one Engravings and Seven Plates. Second Edition, Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1920. Pp. xix-486.

In the author's preface it is stated that the purpose of this work is to present the subject of syphilis in as practical a manner as possible. A careful reading justifies the conclusion that this avowed purpose has been accomplished most satisfactorily. Within the pages of this comparatively small work, Thompson has presented the subject of syphilis not only in a practical manner but in a manner that will appeal to the student, the general practitioner and the specialist, as well. The style is both simple and scientific, and the substance gives ample evidence of the extensive experience which the author has enjoyed in the peculiarly favored Hot Springs, Arkansas.

This second edition undoubtedly meets a growing demand for this excellent work. Several portions have been rewritten, notably the sections treating on visceral syphilis, and other sections have been amplified and enlarged. New data, culled from the most recent literature, have been added, and certain subjects, in which the author has undergone a change of opinion, have been condensed. In a book of such marked excellence, it would be most difficult, and futile as well, to stress any particular chapter or subject. The printing and paper, the illustrations, and the general makeup are admirable, and combine with the work of the author in presenting a book which can be recommended highly as an authoritative work on syphilis.

SURGERY FOR NURSES.

Lectures on Surgery to Nurses. By ALAN H. TODD, B. Sc., M. S. (Lond.), F. R. C. S. (Eng.), Author of *A Practical Handbook of Surgical Aftertreatment*, etc; Orthopedic Registrar, Late Senior Surgical Registrar, Guy's Hospital; Lecturer and Surgeon to the Nursing Staff, Guy's Hospital; Late Surgical Specialist, Lewisham Military Hospital, and Surgeon to the King George Hospital; Late Major and Surgical Specialist, Royal Air Force. London: Edward Arnold, 1920. Pp. vii-270.

It is a frequent complaint among nurses that they see so little operative work, and, if admitted to the theatre, that they have so little chance of really seeing or being told the various steps, so that they receive their patient into the ward not knowing or understanding what has been and now is "going on inside him."

How much this ignorance advances or retards postoperative conditions the comprehensive surgeon is quick to realize. How many of the terms used in operating room work the nurse hardly understands, except the swear words, muttered growlingly when things go wrong. So Mr. Alan Todd has not given the Guy's Hospital nurses mere elementary lessons on nursing, but, in simple form, the fundamental truths of pathology and surgery. Rule of thumb and blind dogma must go; and the nurse become an intelligent cooperator in everything. The author is most painstaking in making all clear, particularly in his first lecture—Inflammation—and is evidently not one of those who would be impatient if a hearer ventured to ask a question afterwards. His sympathies are always with the patients, too, whose pain can be made so much easier by individual treatment, whose ignorance has engendered preoperative fears which the nurse ought to understand. The refusal to give more than sips of water to a man who is as dry as Dives, is an unnecessary form of torture; let him have good draughts. If it must be withheld, let him wash his mouth well out. He calls rectal feeding only a form of glorified starvation, and warns nurses against regarding it as the real thing. Bone inflammation and its pain are carefully shown, and what operation can do, also what it cannot do. The easing of tuberculous joints, the danger of not realizing how far they are healing. The faulty or indifferent dressing of an abscess because it is ordinary or chronic—all these points are dwelt on.

He also draws attention to the estimation and diagnosis the poor form of their diseases. Otorrhea is lightly regarded, whereas it is dangerous; piles, with their attendant wasting and pallor, over the age of forty-five, are often set down to cancer, thorough examination always being urged. The different forms of goitre and kidney disease are given, the operation, and its chance of alleviation. In every operation, the reminder to keep the patient warm, to remember that he cannot shiver to restore the circulation. How very helpless, how pitiable, the afterstages of an operation are; how small an accident may determine life or death, often to be avoided by a real knowledge of the trouble.

Any nurse who cares to learn can learn from Mr. Alan Todd, and, if her desires run so far, she can go on to his *Practical Handbook of Surgical Aftertreatment,* which is equally good.

FEMINISM.

Foundations of Feminism. By Avrom Barnett. (A Critique.) New York: Robert M. McBride & Co., 1921.

The author has given good attention to these foundations by reading critically all the best which has been written for and against, heading his first chapter with: "Science, logic, ethics, sociology, have no conclusions on the questions of feminism which have the validity of physical law." (C. A. Beard), and beginning the chapter itself with W. L. George's assertion that "There are no men, and . . . there are no women; there are only sexual majorities." Thence quoting learned authorities—very many of them—he carries his readers into biological foundations and sex and feminism. He presents an original idea, proving from most recent biological studies that women possess greater variability than men; that is, their possibilities for attaining genius are greater. He quotes, fairly, those who hold the opposite view. He brings out and examines all the forces of natural selection, sexual selection, variation, heredity, adaptation, Malthusianism—no light task. After much that is learned and much which science apparently proves, he has to lament the absence of the solution of the problem of variation in the human species, a solution which may be gained when "our rudimentary knowledge of the physics and chemistry of life cells and processes is more perfect." He laments "the George-Ward-Wagstaff-Christie-Gallichan type with nothing to offer save the redigested conviction of the true Olive Schreiner-Ellen Key feminist type," the whole being an aimless scientific *potpourri.*

What hard, manual work has done for women, a review of different races, civilized and uncivilized, is shown. The old idea that childbirth and menstruation would eventually seriously affect woman's health during hard work seems disproved by their work during the war, though we doubt whether there has been time enough to prove anything. Florence Kelly, a sane writer and observer, says sterility, voluntary and involuntary, is already gaining ground among the wage earning women, and M. J. Rosenau is distinctly against hard work during these times. Carl Pearson predicts the women's problem will be the recognition of maternity as an essentially social activity, by the institution of some form of national insurance for motherhood.

Psychological and physiological foundations, sex differences as a basis of sex spheres, sociological foundations, labor and motherhood, are all elaborately dealt with, but, to judge fairly, the good of the past fifty years must be scrutinized; how much would we have had retained of that which has vanished? College life—that was seriously condemned. Would we return women to the "finishing school" as the ultimatum? The poorer girls to be fitted for their station in life, when no one has the ghost of an idea at which station they will get out. Games—shall the Camp Fire Girls, the athletic clubs, be done away with? Work in store, office, factory, abandoned? Already it has roused doctors and philanthropists to urge, not advantage of their coming to work, but reasonable hours and surroundings both for boys and girls. It has been plainly shown by all men (including Avrom Barnett) that women need the best of health for competent work and motherhood. So, then, let efficiency tests be tried out. The human machine will soon be regarded as a term of slavery. Each will do what work she can do best, even if it has to be the oldfashioned, degrading task of tending little babies, lightened, of course, by electric bath tubs, self-oscillating cradles, electric clothes washer, sweeper and dishwasher, with literature enough to teach a determination of sex. Honestly, do we want the uneducated girls back again—all that education has done obliterated? Mother and child figured largely then in art, but no record was kept of infantile diseases and puerperal fever, of slum dwellings and venereal diseases. In this transitory period of perky girls and half clothed ones, does not the far-seeing wise man see the pretty girls, wearied by revolt, doing all that it seems wisest to do until man's impatience and fair children, born uncomely, point to some still more wholesome way? Women are judged today by the effect some fifty years of practical working life has done to them. Man has some thousands of years of experience already in the working world. Until an archeologist exhumes some records of all that which did the young wives of Enos and Seth, of Cainan, Mahalaleel and Jared, can a fair determination and comparison be made of those who live in 1921?

CAPTAIN MACEDOINE'S DAUGHTER.

Captain Macedoine's Daughter. By William McFee. Garden City, New York: Doubleday, Page & Co., 1920. Pp. xxii-326.

Captain Macedoine is described in this novel as a "supreme illusionist," and his daughter, Artemisia, is consequently a woman without any illusions at all. The child of an inflated adventurer and a Creole mother, she is very much at the mercy of currents on land and sea, a lovely, dusky skinned creature which a derisive, critical smile and "questing" eyes, whatever those may be. She is essentially a person for whom there is no place in the ordered world ashore, particularly the English world, and so she drifts, to sea, to the island of Ipsilon in the wake of her father, to Saloniki in the wake of the wealthy polygamist, Kinaitsky. Men are attracted by her, and to a person of her temperament and heritage their interest can mean no good. And when the chief engineer of the *Manola,* the teller of the tale, is finally empowered to offer her marriage, it is with the knowledge that he is going blindfolded into an adventure the end of which cannot be foreseen. Only there is no adventure. Artemisia dies very much as she has been born, at the whim of a sportive chance, and her death is not even a denouement.

"'It was as though that girl, who had been from her birth a waif, the unhappy sport of spurious emotions, had angered Fate by stumbling upon something genuine after all, and was dismissed into the darkness in a moment of irascible petulance.'"

McFee, in writing this book, has evidently patterned his story rather severely after some of the earlier Conrad books, such as *Lord Jim* and the stories in *Youth,* and the result is not to be commended. In having his story told by a person who repeatedly announces himself a "super in the play," a man even more indefinite than the enigmatic Marlow of Conrad's tales, McFee loses much of the freshness and immediacy of his *Casuals of the Sea,* for instance. The story has the effect of one told second hand, and every now and then when the reader gets swallowed up in the narrow streets of Saloniki or engrossed in the mazes of "international journalism" in Turkey, he is suddenly jerked back to the printed page by the artificial method of telling the tale. To this staccato quality is added the fact that "Mr. Chief," the narrator, goes in for soliloquies, frequently at the most exciting moment, regarding the iniquitousness of the Anglo-Saxon institution and the second hand quality of the Anglo-Saxon himself.

There are many things in this book aside from story of love and wandering over the sea. McFee has drawn one of the most acidulous and satiric portraits of Mrs. Grundy that has been printed. Only she is not Mrs. Grundy, but Mrs. Evans, wife of the captain of the *Manola,* and she is labeled by the author as virtue:

"She was safe. She was a pure woman. . . . Mrs. Evans' function in life was not to challenge but to disapprove. She could endure no discussion of the fundamentals. She could read tales of passion and rape, and not a flicker of emotion would cross that pallid face. But there must be no spoken word. Instinctively she drew back and became rigid, protecting her immaculate soul and the angel child from the faintest breath of reality. In that flat bosom raged a hatred, a horror of beauty and the desire of it—a conviction that it was neither good nor evil, but simply strange, foreign, unknown, unsuitable; incompatible with the semidetached house on the Portsmouth Road whose photograph hung on the bulkhead behind her."

Toward the end of his tale, after much denunciation of the effect of our industrialism on our emotions, McFee elaborates a theory that is akin to James Branch Cabell's "demiurge," and emphasizing the terrific importance of romantic ideas in the world.

The appeal of the book, however, does not lie in its philosophical implications. Mr. McFee explains in the preface that he does not like literary people and literary bohemias, but parts of this story sound as though he had wandered into one and were talking himself out. His airy dismissal of the western world of today is something like Gilbert Cannan's *Anatomy of Society*—young and intolerant and lacking in background. But *Captain Macedoine's Daughter* is primarily a sea story, and in spite of the super in the play it is a tale of fascination and potent charm.

◆

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

FOUNDATIONS OF FEMINISM. By AVROM BARNETT. A Critique. New York: Robert M. McBride & Co., 1921.

JENNY ESSENDEN. By ANTHONY PRYDE, Author of *Marqueray's Duel.* New York: Robert M. McBride & Co., 1921.

THE SLAUGHTER OF THE JEWS IN THE UKRAINE IN 1919. By ELIAS HEIFETZ, J. U. D. New York: Thomas Seltzer, 1921. Pp. ii-408.

SON OF POWER. By WILL LEVINGTON COMFORT and ZAMIN KI DOST. Garden City and New York: Doubleday, Page & Co., 1920. Pp. 350.

THE LETTERS OF WILLIAM JAMES. Edited by His Son, HENRY JAMES. In Two Volumes. Boston: The Atlantic Monthly Press, 1920. Pp. xvi-348; pp. xii-381.

PSYCHOLOGY FROM THE STANDPOINT OF A BEHAVIORIST.. By JOHN B. WATSON, Professor of Psychology, Johns Hopkins University. Philadelphia and London: J. B. Lippincott Company, 1919. Pp. ix-429.

THE AMERICAN SOUL. By CHARLES SHERWOOD FARRISS, Vice-President of John B. Stetson University. An Appreciation of the Four Greatest Americans and Their Lesson for Present Americans. Boston: The Stratford Company, 1920. Pp. 89.

BERGSON AND HIS PHILOSOPHY. By J. ALEXANDER GUNN, M. A., Fellow of the University of Liverpool. With an Introduction by ALEXANDER MAIR, M. A., Professor of Philosophy in the University of Liverpool. New York: E P. Dutton & Co., 1920. Pp. xxii-190.

COMPEND OF DISEASES OF THE SKIN. By JAY FRANK SCHAMBERG, A. B., M. D., Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania; Fellow of the College of Physicians of Philadelphia; President of the American Dermatological Association, etc. Sixth Edition. Revised and Enlarged, with 119 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xiv-314.

GENERAL PATHOLOGY. By Dr. ERNST ZIEGLER, Professor of Pathological Anatomy and of General Pathology in the University of Freiburg in Breisgau. From the Eleventh Revised German Edition (Gustav Fisher, Jena, 1902). Revised by DOUGLAS SYMMERS, M.D., Director of Laboratories, Bellevue and Allied Hospitals; Formerly Professor of Pathology in the University and Bellevue Hospital Medical College. With 604 Illustrations in Black and in Colors. New York: William Wood & Co., 1921. Pp. 594.

A HANDBOOK OF MIDWIFERY. By COMYNS BERKELEY, M. A., M. C., M. D. (Cantab.), F. R. C. P. (London), M. R. C. S. (England), Obstetric and Gynecological Surgeon to the Middlesex Hospital; Lecturer on Midwifery at the Middlesex Hospital Medical School; Senior Obstetric Surgeon to the City of London Maternity Hospital; Surgeon to In-Patients at the Chelsea Hospital for Women; Examiner in Midwifery and Diseases of Women to the Universities of Oxford, Cambridge, London, Manchester, and Sheffield, and Examiner to the Central Midwives Board; Sometime Examiner in Midwifery and Diseases of Women to the University of Leeds, the Conjoint Board of England, and the Society of Apothecaries, London. For Midwives, Maternity Nurses, and Obstetric Dressers. Fifth Edition, Enlarged with Color Frontispiece and Seventy-four Illustrations in the Text. New York: Paul B. Hoeber, 1921. Pp. xv-550.

Practical Therapeutics

THE MEDICAL TREATMENT OF TOXIC GOITRE.*

By Israel Bram, M. D.,
Philadelphia,

Instructor in Clinical Medicine, Jefferson Medical College.

We could best serve our purpose by changing the title of this paper to the Nonsurgical Management of Exophthalmic Goitre. The term medical treatment usually implies the use of substances of strictly medicinal character, while the term nonsurgical treatment includes a consideration of any or all measures which do not require surgical manipulation. Again, it is advantageous to employ the term management rather than treatment, for these patients require considerable psychotherapeutic consideration; and in our efforts to modify the inner life of this individual, we must manage rather than treat, not only the patient, but the husband or wife as the case may be, or the various members of the household, in a comprehensive effort to bring about a desired state of tranquillity or harmony in the social environment. Moreover, I propose to discuss exophthalmic goitre or Graves's disease, and not toxic goitre, as the former term indicates a definite disease of widespread etiology, pathology and clinical manifestations, while the latter term is of less definite connotation, including in its definition not only the former or Graves's disease, but also the secondary Basedow or Basedowified goitre or toxic adenomata. These two types embraced by the term toxic goitre must be clearly distinguished one from the other, else there result not only pitfalls in diagnosis but very serious mistakes in treatment.

To discuss the nonsurgical management of exophthalmic goitre in detail in even slight degree would mean, because of the depth and breadth of the subject, a paper of extreme length, and even then we would but scratch the surface of the topic. The reason for the complexity of the problem is simply the vital necessity of individualization.

In other words, there is no uniform method of procedure applicable in all cases. If uniformity were attempted, failure would result in most instances. Perhaps this is the reason why so few internists are eminently successful in the management of this affection. We must treat each patient in accordance with his or her etiological factors, idiosyncrasies, both physical and mental, and in strict accordance with prevailing sociological conditions. Each case presents its own problems which require that the physician be not only a sort of diagnostic detective to ferret out basic etiological relationships, but also require him to be a psychologist and a sort of ministering alienist in order that he might be capable of favorably modifying the morbid mind. It is the mental element in the symptomatology of Graves's disease which constitutes the almost impregnable antagonist to therapeutic efforts directed by the general practitioner. In view of these circumstances I beg leave to present—not remarks on the use of certain remedial measures to be employed in the treatment of Graves's disease, but rather a few abstract generalizations as guiding influences in its management.

Before proceeding, I shall present a few case histories to illustrate more vividly the fact that Graves's disease is an affection not to be regarded as a surgical entity, but entirely curable nonsurgically if treatment include the proper remedial agencies properly directed for the proper length of time by the properly equipped internist, in the presence of proper cooperation.

Case I.—Mr. E. G., aged forty-eight, appeared in my office ten years ago as an advanced, almost moribund case of exophthalmic goitre of two years' duration. His thyroid was unusually large for a hyperplastic gland; his eyes so exophthalmic that they appeared ready to pop out of their orbits; the tremor of the outstretched fingers was so marked as to extend upward to the arms; the heart was leaking badly from dilatation due to overwork, its rate being 160 a minute with an irregular, arrhythmical pulse; his wan, emaciated expression of frozen fright presented a striking contrast to the edematous lower limbs and abdomen, which latter were indicative of beginning heart failure. Because of the ascites and the water logged limbs, his true weight at the time treatment was instituted could not be ascertained, but from appearances it could be stated as approximately 115 pounds. This was one of the most serious cases of exophthalmic goitre I had ever seen, and in view of the heart condition, the prognosis was far from favorable.

In spite of the great odds against us, the man began promptly to improve under a nonsurgical régime, so that within three months of beginning treatment the subjective and objective signs and symptoms became much less pronounced, and within a year he became entirely well. Even the size of the heart returned to within normal limits, and the murmurs disappeared. I kept him under observation for another year, when he was discharged—not only cured of his almost fatal affection, but stronger and healthier and weighing more than ever before in his life. His present weight is approximately 170 pounds. He was discharged cured eight years ago, and now his eyes, neck, and general appearance are perfectly normal. There is not the slightest evidence of the preexisting illness. For several years, he has been conducting a large ice cream factory, and the hard work entailed is apparently not only harmless to him, but seems to add to his robustness of body and mind.

Case II.—Mrs. J. M., aged twenty-eight, was sent to me for nonsurgical treatment of exophthalmic goitre, three years ago. The disease was of four years' duration. Here also the thyroid was rather large for a case of Graves's disease, the exophthalmos was pronounced, the tremor of the outstretched fingers typical, and the heart rate 130. Her weight was 125 pounds, considerably below her customary weight. Just before the onset of the disease, she became engaged, but because of her illness the date of marriage was indefinitely postponed. After six months of treatment, the patient was so improved that when asked whether she was physically well enough to marry, I replied in the affirmative. Accordingly, she was married to a clean, good young man who had done his utmost to cooperate in treatment. She continued under my care until the end of one year of treatment, when she was discharged cured, approximately two years ago. Since then, she has given birth to a fine baby girl. Her weight is now 148 pounds, heart rate entirely normal, and with the exception of very slight bulging of the eyes on active attention and an almost imperceptible remaining fullness of the thyroid (the persistence of which is due to the chronicity of the case, and which will disappear shortly), she is enjoying perfect health and states that she never felt so well in her life.

---

*Read before the Northern Medical Association of Philadelphia, October 22, 1920.

Case III.—Mr. J. G., aged forty-six, appeared in my office three years ago, suffering from marked loss in weight and strength dating back six months with palpitation, extreme nervousness, emotional outbreaks, insomnia, night sweats, and complete incapacity for work. His weight was 132½ pounds, twenty pounds below normal; heart rate 82 to 90 a minute; there was slight exophthalmos which became more marked on active attention; moderate swelling of the thyroid so that instead of the usual size fifteen collar, he was obliged to wear size fifteen and a half; tremor was typical, and everything else pointed to the presence of a typical Graves's disease of moderate severity. After six months of nonsurgical treatment, he was completely restored to normal and sent back to his work as a machinist, with instructions to report to me once a week for observation. Within the ensuing six months he was discharged cured, weighing 156 pounds, a gain of twenty-three and a half pounds. He has had no medical attention for two years, and now stands here strong, healthy, and happy, feeling better and weighing more than ever before.

Case IV.—Dr. H. G., aged thirty-one, of New York, was referred to me by Dr. G. A. Ulrich, of Philadelphia. He came under my observation on June 23, 1920, with a history of illness of two years' duration, following the course of a severe alveolar abscess. Though the exophthalmos was not marked enough to be seen by the casual observer, the thyroid was moderately enlarged. The tremor, however, was exceedingly intense, indeed his whole body seemed to participate in the vibration of the outstretched hands. Palpitation was so troublesome as to aggravate his already marked insomnia; heart rate was 128. In addition to the severe hyperidrosis, the weakness of the lower limbs was so marked as to render walking rather difficult, and at times he would almost fall over in sheer helplessness.

At present he is nearly normal, and will probably be discharged cured within the next three or four months. He now weighs 151 pounds, a gain of twenty-five and a half pounds, his eyes are normal, heart rate less than 72, the weakness in his limbs has disappeared, he sleeps well, eats ravenously, and is patiently waiting to be sent back to his professional duties.

Case V.—Mr. E. E. L., aged twenty-nine years, draughtsman on the railroad, came under my observation three months ago with a history of evidences of mild Graves's disease or the socalled *forme fruste* of one year's duration. His eyes presented a slight stare of beginning exophthalmos on active attention; his thyroid was moderately enlarged and gave rise to occasional slight dysphagia and dysphonia, and he was obliged to wear a soft collar to avoid uncomfortable pressure about the neck; heart rate was 100, and pulse was somewhat irregular and arrhythmical; weight was 130¾ pounds. In addition to the foregoing, he complained of marked weakness and insomnia, mental excitation on the slightest provocation, anorexia, complete loss of mental and physical initiative, continuous moisture of the skin, and an almost constant feeling of impending severe illness. Although he was not instructed to discontinue his work and was continuously employed even to the extent of absenting himself from Philadelphia for a week at a time, this man, having cooperated faithfully in our treatment, is at present almost ready to be discharged as a cured case. His thyroid is reduced to almost normal; eyes have entirely recovered; tremor, heart hurry, insomnia, weakness, and anorexia have disappeared; he has gained over twenty pounds in weight, and, to use his own words, he now feels "fine and dandy," stronger and healthier than he has felt for many years.

Case VI.—Mr. H. R., aged thirty-eight, cloth merchant, was sent to me for the nonsurgical treatment of exophthalmic goître, approximately seven weeks ago, and presented a typical picture of Graves's disease of moderate severity, of one year's duration. Eyes, thyroid gland, tremor, heart rate, skin, gastrointestinal tract, and nervous system, all seemed to indicate in their signs and symptoms that he was approaching a rather critical course in the syndrome. The effects of our treatment became manifest within a few days. Seven weeks after treatment was instituted, his pulse, formerly 120, was reduced to 80; his weight, formerly 124½ pounds, had increased to 136½ pounds; and all the signs and symptoms of the disease, subjectively and objectively, were rapidly clearing up. The man bids fair to become completely cured within the next four or five months, although he feels ready to resume all his business duties at the present time.

Case VII.—Miss E. C., aged eleven, was referred by Dr. E. Weber, of Philadelphia. She presented a glaring exception to the common belief that Graves's disease usually occurred in early adult life. She had been suffering for the past eighteen months or two years from anemia, anorexia, palpitation, sleeplessness, fretfulness and moderate hyperidrosis and weakness. Her thyroid gland was evidently hyperplastic though not large enough to assume the size of a definite adenomatous goitre; there was beginning exophthalmos; tremor was typical; heart rate 160, and dermographia was easily obtainable.

Nine weeks after the institution of treatment, the pulse rate was reduced to 90; the weight, formerly sixty-three pounds, was then seventy-three; and all the subjective and objective signs and symptoms were so greatly ameliorated as to become indiscernible. In fact, she looked liked an entirely different child, slept well, ate more than the normal quantity of food, appeared plethoric, was very cheerful, and would soon resume her school work. It was expected that she would be discharged cured within the next ten or twelve weeks.

CASE VIII.—In contrast to the foregoing picture with regard to the incidence of exophthalmic goitre in the extremes of age is the case of Mrs. R. S., aged seventy-three, who appeared in my office three months ago suffering from the typical syndrome of three years' duration, and was so weak that she could scarcely walk. Her emaciation was extreme, her weight ninety pounds; the thyroid gland presented a moderate swelling over the isthmus but was normal in size elsewhere; exophthalmos was very marked, the right side more so than the left; tremor was rather coarser than is usually observed in Graves's disease, and as she sat in the chair it was seen that the entire body was trembling synchronously with the tremor of the hands. Heart rate was 100, somewhat irregular, and though there were no murmurs discernible, the quality of the sounds indicated a moderate degree of myocarditis. Palpitation was extreme; insomnia was complete; hyperidrosis was rather intense; and the most ominous of all symptoms in this disease were the rather troublesome nausea, vomiting and diarrhea.

At the present time, after three months of nonsurgical management and in the face of great odds (for in addition to the extreme age of the patient and to the chronicity of the affection, there seems to be little, if any, cooperation in treatment), despite these drawbacks, the patient weighs 111 pounds, a gain of twenty-one pounds; the pulse rate is 80; the patient is restored to nearly her former strength; she sleeps soundly and feels refreshed in the morning; and the exophthalmos and all the other signs and symptoms are greatly ameliorated. If we could obtain the proper cooperation, I feel sure she would be ready to be discharged cured within the next five or six months. I am endeavoring to communicate with her two sons who have heretofore been indifferent to her condition, in an effort to obtain their assistance in the attainment of this goal.

CASE IX. — Mrs. M. H., of Phoenixville, Pa., aged thirty-seven, was sent to me for treatment in July, 1914. She presented the following picture: A thin, frail, anemic woman, weighing ninety-seven pounds, with most extreme exophthalmos, a rather large hyperplastic goitre, a tremor of the outstretched fingers extending upward to the trunk, a pulse rate of 120, irregular, arrhythmical, and of poor volume and tension, heart dilated to the anterior axillary line, presenting a loud mitral systolic murmur of relative dilatation. Palpitation, great weakness, nervous irritability, insomnia, hyperidrosis, nausea, vomiting, and occasional diarrhea were some of the chief subjective complaints. But the symptom most bitterly complained of was the extreme bulging of the eyes; on retiring at night, she was obliged to place two small pieces of cloth over her eyes to protect them from atmospheric irritation, for her lids closed only to within three eighths of an inch of coaptation.

After approximately twelve months of nonsurgical management, during which there were many ups and downs with regard to digestive disturbances and lack of cooperation on the part of the patient and her household, she was discharged completely cured, and even the heart murmur had disappeared completely, for the heart boundaries had returned to within normal limits. She weighed 127 pounds, a gain of thirty pounds. At the present time, five years later, there is no vestige of any signs or symptoms of her former very severe illness. Though discharged five years ago, she makes an occasional visit to Philadelphia and comes to see me to report her condition. When I last saw her, some six months ago, she was weighing 136 pounds, more than she ever weighed in her life. From the time she was discharged cured, she has not had a moment's illness of any sort, and is busily engaged in assisting her husband to conduct a general merchandise store in addition to managing a rather large household.

CASE X.—Mr. E. J. McK., aged thirty-two, who was sent to me for treatment exactly thirty-one days ago. He presented a frightful picture of a severe form of exophthalmic goitre of two and a half years' duration, and when he appeared in my office, accompanied by his wife, he seemed moribund. His entire body was in a state of continuous vibration, and his restlessness was so extreme that there would be now a shrug of one shoulder, then of the other; again, a kick of the knee, a stamping of the foot, a twisting of the trunk, and so on, resembling in this respect the purposeless movements of a sufferer from chorea. But worst of all, when I applied the bowl of my stethoscope to the precordium, I was amazed to find that his heart was in a state of delirium cordis. So impetuous, irregular, arrhythmical and rapid was his heart, that many beats never reached the radial artery, and the frequency of the cardiac cycles was so great that it was impossible to make a computation. It was therefore necessary to employ an approximate figure, and I would say that his heart rate was somewhere between 200 and 210 a minute. Although I usually devote from an hour to an hour and a half in the taking of a history and the making of a physical examination in any new case presenting itself for treatment, I decided that here I must dispose of the patient as soon as possible for fear of cardiac collapse. I explained this to his wife, and hurriedly outlined the preliminary steps in treatment and sent them home again about ten minutes after their arrival, hoping to complete the history and examinations on subsequent calls. His visits were to be made twice a week. During the ensuing calls, I was able to obtain the following data:

Two and a half years before the patient began to suffer from palpitation, nervousness, gradual loss in weight and strength, and lack of initiative. As time went on, these symptoms gradually became intensified, and some months later his neck became rather full in front and his eyes began to stare. These symptoms becoming still worse, he consulted several doctors without relief. During the past six months, his weakness had been so pronounced that he was obliged to give up his position as typesetter and spend most of his time at home and in bed. Urged by his wife to seek relief somewhere, he appeared in the office of a prominent Philadelphia surgeon, about two weeks before coming under my care, and received two or three injections of quinine and urea hydrochloride into the thyroid, according to the method of Watson. This was done by the surgeon as a preliminary to thyroidectomy. The patient felt, however, that he would never survive operation, and accordingly disappeared from the surgeon's view. My examination proved him to be an almost moribund case of very severe exophthalmic goitre. In addition to the heart condition as described, the exophthalmos was extreme, and though his height was five feet ten inches, he weighed but 108 pounds. All the typical signs and symptoms referable to the circulatory, nervous, cutaneous, genitourinary and gastrointestinal systems were present in the most aggravated form.

In less than five weeks of treatment (and in this case we had complete cooperation) the patient appeared a changed person. His heart rate was only 88 a minute, the pulse being full, regular and rhythmical. Subjectively, he was unaware of the existence of the heart, which indicated that it was behaving as it should. His weight had increased by sixteen and three quarter pounds, which fact is very evident in his face, the hollows in his cheeks having disappeared. All the signs and symptoms, subjective and objective, were rapidly disappearing; in fact, the rapidity of his improvement was so remarkable that he felt almost ready to resume his work. Indeed, I promised to send him back to work within three months if the rate of his improvement continued as before. As he now walks into my office at his appointed time, his step is steady, firm, and deliberate, a broad smile illumines his face, and on my inquiry regarding his state of health, he responds: "I am feeling fine, doctor. I feel like challenging Dempsey!"

If space permitted, I could continue presenting and citing enough case histories illustrating the success of the nonsurgical management of exophthalmic goitre to convince the most enthusiastic thyroid surgeon of the fallacy of the knife in the treatment of this disease. Our friends the surgeons do ligations and thyroidectomies, and do them wonderfully well, with a view to what? A low mortality rate and a perfect operative recovery. Of late, they even prove by demonstration that their art improves some patients by a lowered postoperative metabolic rate, but permanent, complete cure is not demonstrable. When improvement occurs, it is shortlived, depending upon the rapidity of the process of compensatory hyperplasia or regeneration of the remnant of the thyroid gland *in situ* by the surgeon. I have never seen a complete, permanent clinical cure of primary or genuine Graves's disease by ligation or thyroidectomy, and many internists and surgeons I know voice this sentiment. On the other hand, the individualizing internist who is properly equipped in the management of Graves's disease has no mortality rate, no recurrences, and in the presence of the necessary cooperation, is capable of affecting cure in nearly every case of the disease in which the patient still possesses recuperative powers.

The surgeon is eminently successful in the treatment of toxic adenoma or secondary Basedow's disease, a condition often confused with Graves's disease; he is successful in the treatment of the socalled Rose or Kocher mechanical "goitre heart," often confused with the thyrotoxic goitre heart, for the removal of the nontoxic goitrous pressure mass relieves and cures the patient. Again, the surgeon may cure the rare case of primary Graves's disease whose exciting cause is found to be diseased tonsils, a "controlling appendix" (McCarrison) or a pelvic neoplasm, the removal of which may cure the patient. But to attack the thyroid gland in primary Graves's disease simply because this organ plays an incidental part in the *modus operandi* of the syndrome, is etiologically, physiologically, pathologically, empirically, and clinically a fallacious, not to say very dangerous procedure.

Exopthalmic goitre should not be regarded a species of the genus goitre and must not be considered a constituent in the classification of goitre. The sooner this fact is recognized, the sooner will all the doubts, obscurities, ambiguities, and equivocations in the management of this disease be eradicated, and the contention between surgeon and internist cease to exist. The keenest authorities everywhere are directly and by implication falling in line with the conception of this disease as being an affection in which the enlargement of the thyroid gland itself is but an incident in the chain of pathological and physiological events yielding the syndrome characterizing Graves's disease. For our present purpose we might at least tentatively prove this conception of Graves's disease by the following facts:

1. That goitre or enlargement of the thyroid gland need not exist and in fact frequently does not exist even in the presence of a most severe degree of this affection. Incidentally, the same may be said of the exophthalmos, which even in the presence of the most severe circulatory and nervous symptoms may be absent. It can thus be seen that the term exophthalmic goitre is an unfortunate one.

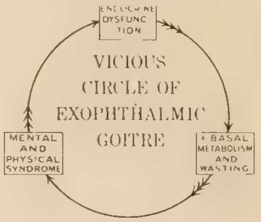
2. The second practical proof of this broad conception of the etiology of Graves's disease is the fact that almost universally perfect results may be obtained by a properly outlined régime of nonsurgical measures which need not include any local therapeusis directed to the thyroid gland.

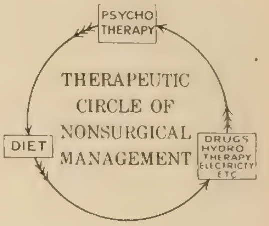
The surgeon in removing a simple goitre removes the only symptom the patient complains of, namely, the enlargement of the neck. There is a good operative recovery, the patient is well and grateful. But a sufferer from Graves's disease rarely complains of the neck itself. It is the entire body, every inch of it, barring nothing, that is sick. Every organ, every tissue, indeed, every cell including every function of the organism is, so to speak, out of joint. There is a heightening of cellular interchange, an increased oxygenation everywhere, the basal metabolism is augmented anywhere up to seventy-five or even one hundred per cent., and the body is wasting more rapidly than is observed in such affections as diabetes mellitus, tuberculosis and carcinoma. This is due to the activation of a series of vicious circles as constituents of one large vicious circle responsible for the entire syndrome. Rational treatment should aim at a permanent calming, so to speak of the troubled waters by the use of such measures as will be directed not to one organ, but to the vicious circle or circles responsible. Though it is granted that the thyroid is in the hyperactive state and the saturation of the blood with its secretion is largely responsible for the symptomatology, this hyperactive state is an effect of causes existing elsewhere in the body, and an attempt merely to break through the vicious circle by thyroidectomy, boiling water injections, and other measures does not attack and eliminate the cause and is therefore futile in permanent results.

Does nonsurgical treatment of exophthalmic goitre yield one hundred per cent. of cures? The answer to this question must take several factors into account, the first of which is the equipment, as psychologist and endocrinologist, of the medical attendant. The average internist has not devoted special time and attention to Graves's disease and its multiform manifestations, as a result of which his treatment only too often falls short of gratifying results. Failing to materially ameliorate or cure within a few weeks or months, he promptly turns his case over to the surgeon, usually for the worse. In spite of evident contraindications to surgery, this has been and unfortunately in many quarters still is the process of reasoning. The properly equipped internist finds no reason for turning his case of Graves's disease over to the surgeon. Secondly, the percentage of cases cured by nonsurgical management depends upon the selection of patients by the internist.

There are three classes of patients who are obviously unsatisfactory: 1. Those who are very evidently moribund. 2. Those who have developed a definite form of insanity, especially those requiring physical restraint in order to overcome destructive tendencies. These patients are to be looked upon as cases of mental aberration requiring the services of the psychiatrist, rather than as cases of Graves's disease. The greatest number of cases of insanity following Graves's are really instances of postthyroidectomy insanity, occurring weeks, months, or years after surgical treatment. 3. Those patients who, after several weeks of observation, are discovered to lack in cooperation. I consider the first few weeks of treatment of any patient as probationary, and if, in spite of properly applied mental appeal, the patient is untruthful and otherwise unfair in obedience to orders, rather than court failure, I discharge the patient with instructions never to return again for treatment. In brief then, the properly equipped internist, after eliminating those who are moribund, the insane, and the noncooperative (constituting approximately ten per cent. of all cases) should obtain one hundred per cent. of cures.

Without going into detail, for that would mean the writing of a volume, what are the underlying principles upon which the nonsurgical management of exophthalmic goitre is based? They are three—psychotherapy, diet, and drugs. These constitute a benevolent therapeutic circle, which, properly directed, is capable of gradually neutralizing and effacing the vicious circle forming the basis of the Graves's disease syndrome. These circles may be graphically represented thus:


ENDOCRINE DYSFUNC TION
VICIOUS CIRCLE OF EXOPHTHALMIC GOITRE
MENTAL AND PHYSICAL SYNDROME
+ BASAL METABOLISM AND WASTING


PSYCHO THERAPY
THERAPEUTIC CIRCLE OF NONSURGICAL MANAGEMENT
DIET
DRUGS HYDRO THERAPY ELECTRICITY ETC

In the therapeutic circle, I consider psychotherapy and diet of vital importance; no matter how valuable drugs may be, they are useless unless the first two obtain. The combination of psychotherapy, diet, and drugs, with or without electricity, hydrotherapy and other nonsurgical means, are measures which produce permanent results without scars—the consummation devoutly to be wished. Just exactly how this benevolent therapeutic circle so successfully eradicates the vicious circle of Graves's disease is largely a matter of conjecture, simply because we are still much at sea regarding the pathogenesis of the endocrine dysfunction and of Graves's disease, but we obtain complete, permanent cures, and that is what the patient wants.

1714 NORTH SEVENTH STREET.

The Endocrines in Pellagra and Pellagroid Syndromes.—Eugenio Bravetta (*Archivio generale di neurologia e psichiatria,* March, 1920) gives a brief review of the studies of pellagra with the conclusions thus far reached. He eliminates the term pseudopellagra believing that there either is pellagra or there is not. The disease is distinguished by skin disturbances, gastroenteric disorder, nervous symptoms, the most distinct of which is the spinal spasmodic syndrome, and psychic symptoms. Among the latter are anxiety and pain, affectivity remains intact, there is clearness and orientation, memory is usually fairly well retained, there is tendency to suicide of a negativistic character. A marked feature is the clear recognition by the patient of his own disease. Other psychic disorders manifest similar symptoms, such as the erythema in alcoholic psychosis, or the pellagra may be present with other psychic disorder. Pellagra is found to return even after a long remission. It has been widely studied in the United States, and these reports agree with the conclusions from Italian investigations. Like beri beri, scorbutus and the edema of famine it is due probably to a one-sided, eccentric diet, the absence of essential vitamines or possibly even some adverse element in the foods. These causes induce lesions of the nervous system and of individual organs. There results chronic inanition, interference with digestion and assimilation, modification of the endocrinous system with hyperadrenalism.

Mental Cases with Endocrine Manifestations. —Guy P. U. Prior (*Journal of Mental Science*, January, 1920) states that it is well known that with many of the grosser lesions of some of the ductless glands there are profound alterations in the patient's powers. There are also less pronounced alterations due to slighter lesions which are for the most part unrecognized. The difference in character and disposition in different individuals and in the same individual at different times may be due to the balance in the variation in the balance of the internal secretions. Those alterations due to the lessened secretion of a gland have been brought about experimentally by removal of the gland in question. The mental changes due to the oversecretion of the glands are not so well understood and the effect produced by the prenatal or congenital gland disease upon cerebral gland development have not been studied to any great extent. Many imbeciles bear the stamp of insufficient glandular development. Some children have had their mental age advanced many years by the feeding of pituitary or thyroid. It is possible that there are many ill defined cases of want of endocrine balance seriously affecting both physical and mental development. The glandular influence is better understood on physical development and structural change than on psychical development.

The thyroid is the gland about which most is known as to its relationship to the mind. In a postmortem examination in many cases of epilepsy the thing most worthy of note was the large proportion of cases in which the thymus was found to persist, and the great number of times in which degenerative changes were found in the suprarenal cortex. That the liver, spleen and pancreas were seldom reported to be normal was considered to be suggestive, but from the number of examinations made the results cannot be said to be conclusive. The fibrotic and atrophied ovary appeared to be present almost invariably. The menstrual function was most irregular in the epileptics. A corresponding change was not found in the same proportion in the male gland. Diminished suprarenal activity may be accompanied by mental symptoms. Acephalous monsters are said to have no suprarenals. Thymus was found useful in some cases of epilepsy. In others it appeared harmful. One patient, who had been taking thymus for years, averaged more fits if this was suspended, and took some months to fully recover the ground that had been lost when glandular feeding was resumed. Thymus caused a retention of calcium, had some control over the formation of acids, and was largely concerned with the phosphorous metabolism, by any of which means it could influence epilepsy.

Thymus was also found useful, as regards both sexes, in cases of increased sexual irritability; here it probably acted by diminishing ovarian, thyroid, or pituitary secretion; an overaction of any or all of these would cause excitation of the sexual organs. Thyroid, in addition to its well known action in athyroidism, had been proved of extreme benefit in cases of primary dementia, chiefly those of the hebephrenic type. When given in rapidly increasing doses astonishing results have been obtained. The parathyroid was found useful in some cases of epilepsy and in some its continued use seemed essential to the well being of the patient. The drug has proved useful in all cases of myoclonic epilepsy in which it had been used. Pituitary had been used in cases of apituitary epileptics, but had not been used extensively for other cases of epilepsy. Calcium therapy did not seem to affect the mental status of the patients.

Interrelation of the Thyroid and Hypophysis in the Growth and Development of Frog Larvæ. —E. R. Hoskins and M. M. Hoskins (*Endocrinology*, January-March, 1920) found that a preparation of the anterior lobe of beef hypophysis, which contained some form of iodine, (1,200,000 of fresh substance), when administered to normal frog larvæ will bring about a precocious metamorphosis, resulting in the production of frogs the size of the larvæ at the beginning of the experiment. If the original larvæ are very small, they never become as large as the controls and the resulting frogs are small. Such frogs have little vitality. If permitted to remain exposed to the air they die and dry down almost flat, losing their shape, and there remains but a very small percentage of the original volume. We have not yet studied these small frogs microscopically, but they appear to have a relatively high water content. Pituitary substance is more toxic to small than to larger larvæ. When the pituitary preparation was administered to thyroidless larvæ which would otherwise have remained in the larval form more or less indefinitely, a beginning of metamorphosis occurred within twenty-four hours; it progressed somewhat more slowly than in the other experiments just mentioned; but it ultimately became nearly complete by the time the animals were either killed or died spontaneously.

From these experiments the hypophysis, in its relation to amphibian metamorphosis, is to be ranked with the thyroid as shown by the well known work of Gudernatsch. We regard the results obtained as due to a stimulation of natural general metabolic processes, either directly or indirectly, but the exact nature of this action is not known. The effect is both progressive, as seen especially in the skeletal and cutaneous development, and retrogressive, as seen especially in the digestive tract and tail. It is doubtful that the action of the anterior pituitary substance is due merely to its iodine content, although such may be the case. Other tissues with traces of iodine will not produce the same effect as the pituitary. It is quite possible that the initial stimulation in hypophysis feeding is exerted upon the calcium and phosphorus metabolism as is indicated by skeletal changes in these experiments, although intestinal transformation also begins very early. The hypophysis and the thyroid are closely related physiologically and can to some extent function vicariously. Recent investigations by various workers with amphibian larvæ have developed the following facts concerning the thyroid and hypophysis:

1. Removal of the thyroid hastens growth, causes hyperplasia of the hypophysis and prevents metamorphosis.

2. Removal of the hypophysis retards growth, retards development of the thyroid, prevents metamorphosis, and retards development of cutaneous pigment.

3. Feeding thyroid or hypophysis (or iodine) to normal larvæ hastens metamorphosis.

4. Feeding thyroid or hypophysis (or iodine) to thyroidectomized larvæ brings about metamorphosis.

5. Feeding hypophysis to hypophysectomized larvæ stimulates growth but does not cause metamorphosis.

6. Feeding iodine to larvæ with both the thyroid and hypophysis removed causes metamorphosis.

Prevention of Diabetes Mellitus.—R. T. Williamson (*Practitioner,* October, 1920) concludes that:

1. It is desirable for all, even for those who are in good health and have no grounds for fearing diabetes, to avoid great excess of sugar, jam, sweets, chocolates, sweet foods and sweet drinks.

2. If, through family history of diabetes, race tendency to the disease, or on other grounds, the onset of diabetes is feared, but sugar has never been detected in the urine, then the following precautions appear advisable: The amount of sugar in the diet should be restricted. Sugar should not be added to any food or drink. Coffee and tea, puddings, etc., should all be taken without sugar. All very sweet food, very sweet fruits, and very sweet drinks, and all articles containing much sugar, should be generally avoided (such as honey, syrup, treacle, dried sweet fruits, figs, dates, raisins, currants, prunes, jams, marmalade, chocolates and sweets of all kinds; sweet drinks such as port, Tokay, champagne, and other sweet wines; whiskey and sugar, gin and sugar, herb beer, liqueurs, fruit juices and syrups, cocktails, gin and ginger beer). Sweet lemonade and cider should be taken only in small amount. Excess of alcohol should be carefully avoided, especially excess of beer and alcoholic beverages containing much sugar. Excess of alcohol probably increases the risk of diabetes in certain cases. Food or drinks containing only small quantities of sugar may be safely taken by this class of cases. Starchy food and starch carbohydrates may be taken in the usual quantities. Excess of food should be avoided, since this is probably a predisposing cause in some cases. If very large quantities of food have been taken and difficulty is experienced in restricting the amount, then foods like green vegetables and jelly, which contain little absorbable foodstuff in the large bulk consumed, may be recommended to be taken freely. A tendency to obesity should be checked, if possible, since the mild form of diabetes is often preceded by obesity. It is probably better to take the daily ration in frequent small meals, since sugar is better destroyed if slowly absorbed. Sufficient physical exercise is very important. Excessive brain work and severe brain strain should be avoided. We often find that diabetes has followed a period of prolonged and intense mental worry, anxiety, or overstrain, or a sudden intense mental shock; these have long been regarded as predisposing or exciting causes of the disease, they cannot always be avoided, but their effects can sometimes be diminished. Family or race predisposition cannot be altered, but something can be done to check it by the mode of life.

3. If sugar has been found in the urine once, and has then disappeared, it is desirable to determine if the power of sugar destruction is diminished. A common method is to give 100 grams of glucose dissolved in a quarter of a litre of water or tea which is taken on an empty stomach before breakfast. If the power of sugar destruction is diminished, sugar is found in the urine from half an hour to three hours afterwards. If the power of sugar destruction is normal, the urine will be free from sugar after this dose of glucose. A convenient though less accurate way is by a midday meal of half a pound to one pound of sweet grapes. The bladder is emptied just before the meal. Then urine is passed about an hour and a half and again three hours after the meal. If samples of each fail to reduce Fehling's solution, the power of sugar destruction is normal or not reduced. If one or both contain sugar, the power of sugar destruction may be considered diminished.

4. If the glycosuria is temporary, but the power of sugar destruction is diminished, then all sugar and all food or drinks containing sugar should be cut off from the diet as in diabetes. Also the amount of starchy carbohydrates should be diminished, but bread may be allowed in ordinary amount, with a small quantity of other carbohydrate food.

5. If the glycosuria is intermittent, or permanent but slight, then the treatment suitable for a mild diabetes should be followed. The ordinary rigid solid diabetic diet may be tried for a short time, but if this fails to check the glycosuria promptly, then other treatment should be carried out (such as the egg and cream diet, or the casein and cream diet, or the milk and egg diet, or the vegetable and jelly diet, for seven days, and the treatment carried out afterwards as in a case of mild diabetes.)

Mental Disorders in Adolescence.—Milton A. Harrington, (*Mental Hygiene,* April, 1920) states that in the development of unhealthy types of mental adjustment, we have a very important field of work and one in which very little has as yet been done. We have at present an elaborate system of schools and colleges in which we cram the heads of the young with languages, history, and mathematics, but we do little or nothing to assist them in handling the vital problems of their own lives. There are very few boys, or girls either, who would not be the better for some assistance and guidance during the adolescent period. We must prevent the development of such cases of functional disorders by helping the adolescent boy or girl to make a wholesome adjustment to the demands of his instinctive nature in the first place, for by the time he reaches a hospital for the insane, he has commonly departed so far from normal habits of thought and conduct that our attempts to reeducate him are of very little use. The biggest field for the psychiatrist in the future must be, not in the hospitals for the insane, but in the community at large. We must have psychiatrists in the schools.

Proceedings of Societies

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting Held at the Academy of Medicine, December 7, 1920.

The President, Dr. Walter Timme, in the Chair.

An Experimental Study of the Effects of Radium Emanation on the Brains of Animals.—Halsey J. Bagg, Ph. D., presented this paper as a part of the report which had been prepared on the work which had been done at the Memorial Hospital on the radium treatment of tumors of nerve tissue. The investigation was undertaken with the primary purpose of determining a suitable technic for the use of radium emanation as a therapeutic agent in the treatment of brain tumors. The experiments were designed to throw light on three points of interest, necessary to know about before radium emanation could be used with any degree of assurance as a therapeutic agent in the treatment of this type of neoplasm. First: The nervous tissue reaction from a histological viewpoint, of the normal brain after exposure to radium emanation. Second: The question of dose, with an idea of the amount of radium emanation to which the normal brain could be safely exposed. Third: The most practical methods of applying the radiation.

Four methods of experimentation were used. First: Unfiltered radium emanation in minute quantities, 0.2 to 1.5 millicuries each, was permanently inserted beneath the scalp in small animals, rats, and directly into the brain tissue in others, rats, guineapigs, rabbits, and dogs. Second: Unfiltered radium emanation in considerably larger doses, sixty-three to two hundred and fifty-five millicuries was inserted directly into the brain substance of rabbits and dogs, and left in place for varying intervals of time. Third: A comparatively large amount of radium emanation, filtered by one mm. of platinum and in the form of capsule applicator, was inserted into the brain of a dog for thirty-five minutes. Fourth: Two large doses of heavily filtered radium emanation, consisting of four thousand and nine thousand millicurie hours respectively, were applied externally over the head in the case of dogs, and a still larger dose of 12,030 millicurie hours was applied, in a similar manner, over the left temporal region of a monkey.

Lantern slides were exhibited showing the technic. A long, fine, steel trocar was passed through a small hole drilled in the skull and by means of this instrument a minute glass tube containing the radium emanation was permanently inserted into the brain. The traumatism incident to the insertion of the trocar was very slight. A radiograph showed the platinum capsule after insertion into the brain. The capsule was removed by means of an attached fine brass wire. The socalled lead tray that was used in the external applications gave a filtration of two mm. of lead, and in addition half a mm. of silver was used. This applicator, in the case of the three treatments that employed heavy external radiation, was held from the scalp at distances of two, ten, and fifty mm. respectively.

The most interesting results were three in number. First: The characteristic localized effect of radium destruction was the most marked feature of the method wherein small amounts of unfiltered radium emanation were permanently imbedded in brain tissues. This localized effect was accompanied by a pronounced polymorphonuclear leucocytic infiltration, which surrounded a completely necrotic area of destroyed brain tissue. The amount of destroyed tissue was about one c.c. in nearly all cases, generally exactly that amount, seldom less, and never more than one or two mm. more in diameter. Second: A considerably greater amount of destruction accompanied larger doses of unfiltered radium emanation, left in the brain for shorter periods of time, although the dose, as judged by the number of millicurie hours, was the same as for the small doses which acted over a comparatively long period. Third: Comparatively slight, if any, brain changes followed exposure to strong doses of heavily filtered external application of radium emanation, although such doses were considered of sufficient strength to affect the cells of a brain tumor materially.

In comparing these results it was interesting to note that a considerable amount of brain tissue was destroyed by the first method, without the animals showing any discernible neurological disturbances, even though they were under observation for over six months, but that when the same dose in number of millicurie hours was given by means of a comparatively large amount of radium emanation, acting over a short period of time, the neurological reactions accompanying this more severe and rapid destruction were pronounced and generally terminated fatally a few days after treatment.

The three large doses of radium emanation, heavily filtered and externally applied, supplied the evidence that the normal brain, as judged by gross and microscopical examination, as well as the absence of neurological symptoms was markedly, what might be called resistant to exposure to gamma radiation of radium emanation. In the case of the two dogs thus treated, care was taken to protect the scalp, and the animals were apparently well and active at the end of a month. In treating the monkey the radium dose was greatly increased and the applicator was placed near the scalp, thus increasing the intensity of radiation on the skin as well as within the brain. A careful study of the animal's neurological reaction showed nothing abnormal. The animal had previously been trained, by the behavioristic method, to obtain its food by opening a puzzle box fastened by three catches, and it was interesting to note that its reactions to the box situation were only very slightly different before and after treatment, and the changes that did occur were probably referable to disturbing factors arising from a severe radium burn, which later developed over the side of the head that was exposed to the radiation. The results of the burn culminated after a month's time in the death of the animal, and the study of the brain in this case, although the radiation had been increased to the limit, showed no gross changes, except a certain amount of anemia of the cortical bloodvessels of the brain directly exposed to the radiation, and a microscopical examination showed no definite degenerative changes.

Of the four methods that had been tested, one might consider the surface application of heavily filtered radium emanation as a relatively safe procedure in the treatment of brain tumors. The burying of small doses of unfiltered radium emanation was also suggested as an especially favorable method of treatment. The relatively sudden destruction produced by comparatively large doses of unfiltered radium emanation made this method a doubtful procedure. While the imbedding of filtered radium emanation was still uncertain, it was possible that by using still larger doses than were employed in these experiments, and decreasing the filtration, this method might also be considered applicable.

The Structure of Nerve Tissue Tumors with Reference to Radium Therapy.—Dr. JAMES EWING discussed the types of tumors that had been treated by radiation and noted that regardless of its future as a therapeutic agent, radium therapy had demonstrated certain biological properties of malignant tumors previously unrecognized. Basal cell carcinoma was susceptible to radium, but squamous carcinoma comparatively insusceptible. Lymphosarcoma disappeared readily under gamma rays.

The structural characters which determined susceptibility to radiation were a cellular character, an undifferentiated form of the cells, rapid growth with abundance of mitoses, vascularity especially when due to abundance of delicate capillaries, and absence of much intercellular substance. When the cells were differentiated and adult in type, when they grew slowly and mitoses were few, when the blood supply was through well formed adult vessels, and when there was much intercellular substance, the tumors were relatively insusceptible.

Neurofibroma or neurosarcoma structure presented features of the resistant tumor. This was unfortunate since it was so common and was especially prone to recur after excision. More than one hundred recurrent cases of this type had been received at the Memorial Hospital during the past two years. Most of these tumors were not recognized, and were designated sarcoma. The structure of intertwining fibrils and long spindle cells was quite specific, however. They differed in reaction to radium from the soft and vascular fascial sarcomas. They first occurred as apparently innocent movable tumors of the subcutaneous tissue or intermuscular planes. If surgical intervention was not successful, little aid from physical agents might be expected. Neurofibroma of the acoustic nerve had an unfavorable prognosis, usually, but there was a myxoglioma of the optic nerve occurring in young subjects which did not recur after enucleation.

Of the endotheliomata, psammoma since usually subdural in location, might be affected by radium, especially if the radium was applied directly to the tumor. True angioendothelioma or perithelioma, composed of large polyhedral or cubical, occasionally flattened cells surrounding blood channels, occurred in the rare diffuse sarcoma of spinal meninges, and should be more susceptible to radium.

Angiosarcoma, one of the few tumors that had been satisfactorily traced to a traumatic origin, should be markedly influenced by radiation, since its nutrition was unstable, but whether slow and safe regression could be accomplished was doubtful, especially with bulky tumors. Glioma, however, of all tumors of brain and spinal cord, presented most of the structural features that favor susceptibility to radiation. It was the most frequent brain tumor, and was chiefly cortical. Its comparatively rapid growth, lack of encapsulation and secondary effect on surrounding brain tissue were unfavorable features. Of the three main types, astrocytoma, gliosarcoma, and neuroepithelioma, only the first contained anything like resistant intercellular material. Primary carcinoma of the brain assumed an embryonal type of ependymal glioma, or had the adult type of papillary adenocarcinoma. These latter usually had small cells, and very delicate mucinous stroma grew slowly. Their structure indicated a high degree of susceptibility to radium.

The group of hypophyseal tumors included cysts, chronic adenomatoid hyperplasia, cellular adenocarcinoma, glioma and hypophyseal duct tumors. There were no data suggesting that radium could affect the accumulation of fluid in the cysts. Chronic hypophyseal struma with acromegaly had already been definitely influenced by x rays directed through the temporal regions. The possibility of applying radium successfully and safely depended upon the obstacle presented by the skull and the distance of the tumors from the scalp. These obstacles were met by increased doses. Effective doses of radiation could be delivered through the skull to influence the growth of cellular tumors, as had been demonstrated experimentally by the work of Dr. Bagg on dogs and monkeys. In the brains of normal dogs and monkeys a dose of 2000 millicuries of emanation filtered through two mm. of brass and placed for six hours at a distance of six to ten cm. from the skin, had not produced any structural changes, although it had produced rapid regression of deep glandular carcinomas, metastases of testicular carcinoma and retroperitoneal lymphosarcoma. A much higher dose, resulting in caustic necrosis of the scalp, might be tolerated by normal brain tissue. When the tumor could be exposed it became accessible to direct application of radium or the insertion of emanation needles. If the latter were to be used it was very important that the tumor tissue should not be disturbed by partial excision.

Clinical Results of Treatment of Nerve Tissue Tumors by Radium.—Dr. DOUGLAS QUICK said that there were few cases that had been studied clinically and the literature was deficient. Most of the cases in which radium treatment had been applied were pituitary tumors. Bieleva, Loeb, Cauvin and Gunsett were the chief exponents abroad. The general opinion was that the pressure symptoms might be relieved to a considerable degree by the use of radium. Pressure symptoms cases were extrasella, and therefore usually inoperable. Headache and eye symptoms were relieved rapidly in many cases. Where changes were due to cysts there was less likelihood of favorable results.

There was marked improvement in pressure symptoms with checking of the metabolic and trophic symptoms. The tumor was in a favorable location for treatment. Exposures might be from the front and sides or from the nasal route, and the floor of the sella might be removed giving more direct access.

In the three cases, on which Dr. Quick has already reported, one patient died. This patient had a pituitary tumor removed some time previously. A second operation had been performed followed by treatment by radium radiation. The patient had profuse coryza at the time of the treatment. Meningeal involvements appeared and the patient died. The infection had been introduced by the nasal route.

The second case was that of a young woman who had had two operations for adenoma the year before. There was blindness in the right eye, partial blindness in the left eye, projectile vomiting. She was treated externally and by the nasal route. The condition improved, the vomiting was relieved and the dizziness also. The eye symptoms were stationary. The patient two and a half years after treatment was able to get about and was fairly comfortable. Nothing could restore the vision.

The third patient was relieved from severe headache and pressure symptoms. An operative procedure without exposure of the tumor was carried out for exploratory purposes only. The patient returned with severe headache which was relieved by treatment. Dr. Quick's earlier experience with intracranial tumors, he stated, was limited and unsatisfactory. One was of a cortical tumor in which there had been previously a right temporal decompression. This was radiated with extremely small doses, the treatment was short, the patient died and nothing was accomplished. A second case was of cerullar tumor in the region of the vermis, in which decompression was advised and refused. Treatment was applied on either side and posteriorly. There was improvement for six weeks, then cerebellar ataxia, vomiting, the patient had to be carried to the office. Six weeks later he could walk. Then the symptoms recurred with increased pressure. A decompression was done, and the child being in poor condition died. The tumor had not been localized. The case of a child of four, who had an orbital tumor, was also cited. The mass in the upper right orbit was removed, and recurred. External radiation treatment was applied for five months. The mass could be promptly reduced, but would recur. The eye was then removed, and radiation carried on in the orbital cavity. The tumor was attached to the orbital nerve. The growth was essentially a spindle cell myxosarcoma. It was not entirely removed. Radiation was applied directly to the base. Although only a short time has elapsed since the operation, recurrence has not yet been noted.

In over one hundred cases of neurosarcoma at the Memorial Hospital only one was a primary growth while the recurrences ranged from one to twenty-one operations. This type of tumor was discouraging in general. A given area might be destroyed, another recurrence might take place somewhere else along the course of the nerve, not necessarily by continuity. It could be destroyed locally if large enough doses were used.

Dr. Quick said that our knowledge indicated the judicious use of radium and surgery combined. Operation should not be resorted to unless radium was at hand to be applied at the same time if it was found possible to bury it in the tumor.

Two patients were presented at the meeting, the first of whom was a boy of seven who three months before had had frontal headache, projectile vomiting, double vision and ataxia. He had a convulsive seizure two months before. A decompression operation was performed on him at Mt. Sinai and a neoplasm in the left lateral lobe of the cerebellum and vermis was found. A bilateral decompression was performed which relieved the pressure symptoms and vomiting. He was unable to walk when admitted, was ataxic and fell to the left. There was bilateral and vertical nystagmus. The disc outlines were hazy. Radium treatment consisted of three separate treatments, one dose of 8712 millicurie hours at the left occiput, 8000 millicurie hours at the right occiput, and 7000 millicurie hours posteriorly. Ten days after the first dose he was able to sit up and could coordinate better. After the second series of doses his station improved. There was now no evidence of cerebellar disturbance. Epilation of the hair was marked over the radiated area. In all 53,738 millicurie hours were applied, practically all of it at six centimetres distance.

The second patient, a young woman of twenty-three, was referred to Mt. Sinai for tenderness in the right lower chest and right scapula. She had been injured in some amusement park six years before. The right leg was stiff and tense, and dragging. For three weeks she had complained of girdlelike pain. X ray showed deviation to the left, and a mass to the right of the fourth dorsal spine was located. It seemed to be bony in consistency, and was apparently connected with the vertebral column. A portion of the tumor was removed. The infiltrating base was adherent. Eleven days after operation the patient was sent to the Memorial Hospital. The tumor tissue was found to be composed of polyhedral and spindle cells, chiefly nuclei. The tumor was classified as an anaplastic glioma. Its origin from ependymal cells was considered possible.

A large dose of radium was applied to the site of the tumor. Packs at a distance of ten cm. with a dose of 18,000 millicurie hours were first used, twelve days later, 11,000 at six cm. She was then able to move her legs more freely. Four weeks later, three doses of 6,000, then 7,000, then 12,000 were given. In all 60,378 millicurie hours were applied all except the first dose at a distance of six cm. She regained control of her extremities to a large extent. The improvement was gradual but pronounced. The amount of radium found necessary for use externally was 50,000 or 60,000 of filtered rays. It was found relatively safe to use radium directly in the substance of the brain. Therefore exploratory operation and radium therapy should be carried out at the same time, and should be provided for in every case. In the boy's case much less radiation would have been sufficient and the result would probably be more permanent.

Dr. CHARLES H. FRAZIER, of Philadelphia, opened the discussion of the subject. He said that his interest in the effect of radium upon tumors of the central nervous system was first aroused in 1914. He called attention to a number of points in which malignant tumors of the brain differed strikingly from malignant tumors in other parts of the body and why there was a larger field for radium here than in the other organs or structures. Much information must be derived from the experimental work in matters of technic. Dr. H. K. Pancoast would report on that. Dr. Frazier's experience included altogether twenty-five cases, of which number six were gliomata, six endotheliomata or sarcomata, one teratoma and twelve undetermined. He cited the clinical histories of three cases which he had selected because they had been under observation the longest; one seven, one six, and one four years. He then discussed the question of radium therapy in pituitary lesions and called attention to the fact that these lesions lent themselves to radium therapy because of the opportunities, after a sellar decompression to place the radium tube in close proximity to the lesion. He gave as his opinion that he believed the first step in the surgery of pituitary lesions was a simple subsellar decompression without attempting removal of tissue, except perhaps for diagnosis, this operation to be followed by x ray treatment to be repeated at such intervals as seemed desirable.

As to the results obtained, in the total series, eleven of the twenty-five patients had died since the treatment began and there are fourteen still living. Of the survivors three were alive six years after treatment; one was alive five years after treatment; four were alive three years after treatment; two were alive two years after treatment; four were alive one year after treatment.

Of this number there were four in whom the tumor was removed and two of these were known to have recurrence. Of the latter, one had a sarcoma of the right cerebellar hemisphere which was being treated by direct implantation of radium needles. After the last treatment there was within two weeks a substantial improvement.

In analyzing the results he found that the best work had been obtained in pituitary lesions and in endotheliomata. He had no evidence whatsoever that led him to hope that radium had any influence on gliomata. The series which had been reported should not be regarded as a criterion because it had been impossible always to apply radium at such intervals as seemed desirable. Patients living at a distance from the hospital often could not be persuaded to return when ordered to report. As to the conclusions, the evidence at hand justified the following statements:

1. Radium will retard the growth of endotheliomata; two patients still under observation for six years.

2. There is no evidence warranting the assumption that radium influences the course of the gliomata.

3. Radium has proved effective in lesions of the pituitary body.

4. Radium is now employed:

a, As a prophylactic against recurrence always after the removal of the growth; b, as a prophylactic against recurring visual disturbances after sella decompression; c, as an active agent by direct implantation in all inoperable growths exposed on the operating table; d, as an inactive agent by indirect application in all inoperable growths.

Dr. H. K. PANCOAST said that there were many reasons for regarding tumors of the brain as an admirable field for treatment by radiation. In order to determine the effects of radiation upon normal brain tissue it was necessary to carry out preliminary experiments upon the brains of lower animals and dogs were selected for the purpose. Over a year ago under the direction of Dr. Frazier and himself some third and fourth year medical students took up the work of implanting radium tubes in dogs' brains and studying the effects after a period of time which should have been sufficient to show any changes. After a lapse of four to five weeks following the implantation the dogs were killed and the brains removed and sections made of the areas treated. The exposures were made over the motor area in order that any resulting motor disturbances could be observed in addition to the effect of the radium upon the brain tissue. The men started with small doses of three hundred milligram hours and this was increased up to nine hundred milligram hours. One tube of fifty milligrams of radium, well filtered in order to remove all beta rays, was employed in each instance. The tube was placed directly upon the motor cortex.

The results of these experiments had already been published but brief mention would be made of the results in order to compare them with the results of other experiments by Dr. Pancoast, Dr. Frazier, and others.

Microscopic sections of the brains of the dogs exposed to nine hundred milligram hours showed that for a distance of two millimetres approximating the tube there was a necrosis of brain tissue. Outside of this there was an area two millimetres wide in which the bloodvessels showed an endarteritis and for a distance of another millimetre there was a zone of hyperemia.

These experiments assured them that comparatively large doses of radium could be employed in the treatment of brain tumors without the danger of serious destruction of brain tissue surrounding the tumor. In other words, in using reasonable doses of radium the effects of the radiation upon the surrounding normal brain tissue could be disregarded. Other experiments were recently carried out by Dr. Pendergrass assisted by some fourth year medical students in order to determine the effects of larger doses of radium made upon the motor cortex and of implantation of radium into normal brain of the motor cortex. Two dogs were used. In one a dose of 2100 milligram hours and in the other a dose of 2500 milligram hours was applied over the motor cortex directly on the surface. Both dogs died in about one month. There was no paralysis and no necrosis of the flaps. The adjacent brain area was found to be congested and indurated. Death probably resulted from the effect upon the brain but sections were not made. These experiments showed that there was a limit to the direct exposure which could be applied to the brain of an animal the size of a dog.

Further experiments were carried out by implantation of two needles containing twenty-five milligrams implanted in the motor cortex of two dogs for eighteen and twenty-four hours respectively, giving a dose of 450 and 600 milligram hours. No paralysis resulted. Both dogs died suddenly within a week, but were well two days before death. The autopsy showed no infection of the flap or the brain. There was a general serositis including the peritoneum, pleura and joints. The peritonitis was of a very virulent form. Unfortunately, no cultures were made but if the same experiments were carried out again and with the same results this would be done. The needles were carefully sterilized in alcohol for one hour before implantation which would seem sufficient to bring about sterilization. These experiments were not conclusive and needed to be carried further.

It was interesting to note the results of one experiment carried out by Dr. Bagg in which a large dose of 4000 milligram hours was applied outside of the skull and the brain exposed by cross firing to that large dose, with no subsequent microscopic changes in the brain tissue. Much valuable information could be gained from the results of these experiments and it was quite possible to base a fairly safe technic upon them.

The application of a safe technic for the treatment of tumors of the brain by radiation required careful observation of the following points:

1. A knowledge of the type of growth to be treated.
2. A knowledge of the relative amount of radiation required in the treatment of such a growth.
3. The size of the growth from the centre to the periphery where the tumor was actively proliferating if central implantation was practised.
4. If the growth was irregular and not truly spherical there was still greater reason for carefully guarding against undue effects upon normal brain tissue.
5. It was best to give an underdose by implantation and to supplement this by cross firing from the outside of the head.
6. Dr. Frazier and Dr. Pancoast were as yet unwilling to advocate implantation of needles at the actively growing periphery of tumors until the action of radiation upon brain tissue was better understood and the margin of safety has been better demonstrated.

Tumors might be grouped in the following manner for treatment:

1. Tumors found at operation and which could not be removed. A moderate dose of radium might be applied by implantation of the tube in the centre of the growth and this supplemented by cross fire radiation from the outside of the head.
2. Tumors found at operation and partly removed. These might be treated in the same manner.
3. Tumors not localized and not found at operation or inaccessible at operation. Such tumors might be well treated by cross fire radiation from the outside of the head in all possible directions. This might be done apparently without any danger to normal brain tissue.
4. Pituitary growths. These growths might be treated after decompression, after partial removal or at a time subsequent to operation when there was a recurrence of symptoms. The technic employed by Dr. Frazier and Dr. Pancoast had been the application of radium below the sphenoid sinuses for a period not sufficient to cause serious damage to the structures in this neighborhood. This was supplemented by cross fire radiation with x rays through each temporal region toward the hypophysis.

Dr. ROBERT ABBE said that during eighteen years of earnest study and use of radium in every surgical condition he had had only three cases of cerebral or spinal tumor referred to him for treatment, and these were post operative, where the gliosarcoma had been impossible to remove and the wound was closed over them. The bone, however, had been removed by trephine and rongeur so that radiumization could be given (through an inch thickness of fleshy tissue). No benefit had followed that he could see.

Dr. Abbe believed that the better technic would be to apply radium (twenty-five or fifty milligrams) in a small sterile tube without filtration of metal, directly to the tumor in the open wound under anesthesia for thirty minutes, and then close the wound completely. His experience with this method in true cancer in other parts of the body, as suggested by Dr. Wickham, of Paris, in the early days of radium work, had given him more wonderful results than by any other method.

To some degree the skin seemed to act as an insulator against penetration of the best soft beta rays which were the most fruitful of results. In fibrosarcomas of the dura he had found no benefit from radium.

Dr. Abbe had never seen cerebral disturbance from radium applications externally in human subjects. He had treated four cases of sclerosis of the cord (syringomyelia) referred to him by neurologists. In three cases no benefit followed. One case showed extraordinary beneficial results. The patient had led a very active life until eighteen months before Dr. Abbe saw him. Then an ascending hemiplegia began in the leg and arm, with other characteristic symptoms, eliminating cerebral or cortical lesion. Exhaustive study by the eminent men of the Neurological Institute gave no hope. When seen by Dr. Abbe he could walk two blocks with unsteady gait by aid of a cane. The arm had spastic paralysis with cramps as well as the foot. Radium, 250 milligrams, shielded by one tenth millimetre of lead, and two inches of gauze was applied for two to four hours at a time at suitable places

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, MARCH 2, 1921.

on the spine, from the occiput to the midlumbar region, once or twice a month. In six weeks he showed improvement, and in three months walked four miles daily. Later he gave up his cane and walked ten miles daily in his business. His spasms and paralysis improved markedly and he has had no relapse up to date, four years after treatment. He uses his paralyzed hand to cut his food and turn the key in his door and for all other uses. No other medication or treatment was given. Wassermann reaction was negative.

Dr. Israel Strauss said that direct radiation of tumors at the surface and in parts of the brain where removal would incapacitate the patient, would be advantageous. In such cases neurological surgeons should not remove the tumor and then apply radium. Dr. Strauss recalled an inoperable tumor where radium was used with each recurrence of the growth after the surgeon had removed the obvious neoplasm. He considered this method of treatment incorrect. In the boy shown by Dr. Quick, the tumor was in the left lateral lobe of the cerebellum and vermis. At operation the vermis was enlarged, gelatinous in appearance and displaced to the right. Symptoms pointed to involvement of the left lateral lobe. It would have been risky in this case to insert radium. It was considered far better to carry out the decompression and then turn the patient over to the radiologists. Not a symptom of tumor was visible at the present time. It was too early to state whether the results were attained by the radium or by the decompression but in this case it seemed that the proper method had been pursued.

In the case of the woman the nature of the growth was responsible for the excellent result of the radium treatment. There was a hard mass to the right of the vertebra, near the angle of the rib. This mass appeared attached to the rib, and the surgeon was asked to remove it under local anesthesia, in order to obtain the diagnosis of its nature.

At the operation the surgeon found that while the mass was attached to the periosteum, it grew inward, towards the vertebral column, and could not be separated from this. The neurological symptoms were those of an extramedullary and not an intramedullary growth, and the diagnosis of a bone tumor, probably sarcoma, was made. The section of the tumor in the opinion of the pathologists at Mt. Sinai and Dr. Strauss was that either it was a small round cell, or small spindle cell sarcoma. It could not have arisen from the glia because the symptoms, as stated above, were not those of an intermedullary neoplasm, and glioma cannot arise from other than glial tissue. However, Dr. Ewing did not know these facts, and was given only a single section from which to make his diagnosis. Dr. Strauss said that he understood that the sarcomata were particularly susceptible to treatment by radium. An operation, involving the vertebral column was not permitted, because in their experience, when these growths were operated upon, they spread with great rapidity. Hence it was decided to try radium with the very good result which was demonstrated at the meeting. This patient had every opportunity to make a perfect recovery.

In a case of pituitary disturbance observed some four years ago applications were started right after sellar decompression in the nasal pharynx. The radium was put into the tumor. This was a mistake for meningitis resulted in forty-eight hours. The procedure should have been, sellar decompression to save the eyesight, then radium applied in the nasal pharynx, but not put into the tumor. Enough radium should be used to go through the sphenoid. The removal of the floor of the sella turcica offered an opportunity for herniation. One case in which there had been great improvement for a time, showed return of symptoms, a mass was found in the nose which was subjected to manipulation with resultant streptococcus infection and death. Dr. Ewing thought radium if used early enough was sufficiently penetrating to use without sellar decompression.

Glioma ought to be susceptible to radium. Surgery did not cure glioma of the brain in most instances, since it was so difficult to get at, so difficult to remove, and since it usually recurred. Radiotherapy, therefore, ought to be tried and when more was known about it might furnish a means of treating these growths successfully.

Encephalitis Lethargica with Severe Recurrent Narcolepsy.—Dr. Walter M. Kraus showed a boy who had lethargic or narcoleptic attacks during the day with insomnia at night. The patient had an influenzalike attack in February, 1920, and after this was continuously somnolent for six weeks. He could be aroused to take nourishment and he recognized his family at these times. This somnolent period was followed by a period during which he was unable to sleep at night, and was very sleepy during the day. He would fall asleep while standing up. He was admitted to Bellevue Hospital, where an examination was made. The case was considered to be typical of the group showing involvement of the basal ganglia.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 10. NEW YORK, WEDNESDAY, MARCH 16, 1921. WHOLE No. 2205.

Telangiectases of the Face and Mucous Membranes of Nose and Throat Associated with Severe Epistaxis

*New Form of Treatment of Nasal Bleeding**

By WOLFF FREUDENTHAL, M. D.,
New York.

Ever since Babbington, in 1865, published a case of recurring epistaxis due to telangiectasia of the skin and mucous membranes, similar reports have come from many scientific centres. But the total number of reported cases is still small enough to warrant the presentation of this case, which is interesting from several points of view.

Although the etiology of this class of cases is still as obscure as it ever was, one thing is positive, viz., the hereditary factor. In almost all the reports the histories have been followed through several generations, and the same symptoms, especially recurring epistaxis, observed in each generation. Thus Babbington made this observation in a family for three generations, and Legg, Chiari and others noticed similar conditions. Very exhaustive is an article by Walter R. Steiner on Hereditary Hemorrhagic Telangiectasia (1). Steiner had seen three such families, and gives their histories, as well as those recorded by several other authors. In the first of these families, consisting of twenty-one members, recurring hemorrhages were noticed in five persons belonging to five generations. In the second family this happened in three members for two generations, and in the third family for three generations.

The disease manifests itself in localized dilatations of capillaries and venules, forming, as stated by Hanes, distinct groups of telangiectases, which occur especially on the skin of the face, nasal and buccal mucous membranes, and give rise to profuse hemorrhage, either spontaneously or as the result of trauma. Microscopically a developmental defect has been found (Steiner) in the dilated capillaries, as the elastic and muscle fibres appear to be wanting. The capillaries, consequently, are very prone to produce hemorrhages by their rupture. Clinically, syphilis, chronic plumbism, hyperthyroidism and nephritis have been found to be causative factors of cardiovascular degenerative conditions, which again lead to the formation of telangiectases all over the body. In how far these conditions had any bearing upon my case will be explained later on.

CASE.—A. N., fifty-five years of age, a cloak finisher, was born in Rumania and had been sixteen years in the United States. His father died at seventy-five from old age, his mother at forty-five, probably from a cardionephritic condition. She suffered greatly from nosebleed. One brother died at the age of fifty-six in the postoperative stage of a hemorrhoidectomy. For several years before his death this brother bled from the nose rather freely. One sister, living and well, bleeds occasionally. Another sister is in Europe. There was no history of diabetes, cancer or alcoholism.

The patient himself had had measles, malaria for several summers between the ages of seven and ten, facial erysipelas, influenza and pneumonia four years ago. For the last twelve years he had suffered from epistaxis, which became worse during the past four years, that is, since his attack of pneumonia. He had been married thirty-one years. His first wife was dead. She had been pregnant six times, miscarried twice, had one stillbirth, and two babies died in infancy. His second wife was living and well; five children; no miscarriage.

From this history one can readily recognize the hereditary element in this disease. The patient's mother and, as far as is known, one brother and one sister, suffered from recurring epistaxis, and undoubtedly there was the same condition in all these cases. But let us continue with the patient's history.

On admission it was found that there were small angiomata all over the body. Some of these were not larger than a pinhead, while others were as big as a pea. Such telangiectases were seen all over the face, and one in particular on the right side of the septum. Others were upon and under the tongue, on different parts of the soft palate, etc.

The patient was seen by Dr. Hauswirth, Dr. B. S. Oppenheimer, Dr. Laporte, and Dr. Harlow C. Brooks, consecutively. Their diagnosis was: Multiple angiomata, secondary anemia, chronic nephritis and myocarditis. These gentlemen had charge of the patient at the Montefiore Hospital as far as the

---

*Read before the Metropolitan Medical Society, November 30, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

medical aspect of the case was concerned. Röntgen pictures were taken by Dr. Scholz. Examination of the accessory sinuses of the nose, by the way, was negative, but of special interest were the findings in his legs. They showed marked irregular thickening of the corticalis along the outer aspect of the middle of the right tibial shaft. A similar condition was present in the left tibia, although to a much less degree. The skull showed a few localized areas of bone absorption throughout the upper part of the cranium, otherwise no definite evidence of abnormality.

These x ray findings, together with the personal history of his first wife, were so strongly suggestive of lues that Dr. Hauswirth made that diagnosis, to which he adheres. Wassermann tests made repeatedly were always negative. We have, therefore, before us a case of multiple telangiectases all over the body, affecting the skin and mucous membranes of nose and throat, causing epistaxis of a dangerous character, together with syphilis, chronic nephritis, and myocarditis.

I, of course, was especially interested in the epistaxis. In the beginning of the disease and for years afterward this occurred only once every month. But since his attack of pneumonia, four years ago, epistaxis has occurred several times a week. It lasts from ten to thirty minutes. Occasionally it is so profuse that the blood runs down his throat so rapidly that he is unable to expectorate it. He has to drink it, as he says. Is that perhaps one of the reasons that he is still alive? As soon as the patient was transferred to the throat department of Montefiore Home the writer tried every conceivable means to stop the bleeding. Occasionally we thought we had it under control, when very soon it would start again, just as bad or worse than ever.

At the beginning of our treatment, knowing that there was an atrophic condition present in the nose, we tried to soften the mucous membrane with an oily spray and then apply a tampon saturated with ichthyol. After that, astringents were applied, nitrate of silver and trichloracetic acid. For several weeks we were under the impression that the latter application had done the work, because the bleeding was very slight as compared with the former hemorrhages. However, it started again and the galvanocautery was applied, which apparently had a bad effect, as he bled more than before. This occurred three times, when the galvanocautery was given up definitely. Finally the injection of hot water was recommended, but it was impossible to make use of it in this case for the following reason: The septum was deviated toward the left side and the telangiectasis that was doing all the harm was located just in the angle of the curvature on the right side. Besides there was a spur on the right side, which made it more difficult to reach the angioma by any submucous injection. In the meantime the patient had lost ground considerably, and I proposed to him lifting up the entire mucosa of the septum on the right side and placing tampons between it and the septum. The patient, however, did not care to submit to this procedure, and I did not urge the matter too much, as the operation might have been attended with a great loss of blood, perhaps more than he could afford to lose. The only thing that gives some relief to the patient now is thromboplastin, which he himself applies to the nose on a pledget of cotton.

The last attempt we have made so far was with sodium citrate. Dr. Harold Neuhof had read a paper on the intravenous injection of sodium citrate (2), and I thought it worth while to give this method a trial. Dr. Neuhof was good enough to be present at the first injection, which was given by one of his assistants on December 7, 1920, twenty c. c. of thirty per cent. sodium citrate solution being administered intravenously. It took fifteen minutes to inject the fluid, as the idea was to make these injections very slowly. The coagulation time directly before the injection was sixteen minutes. At 4:35 p. m., that is, twenty minutes after injection, it was eight minutes, and at 7:15 p. m., or three hours after injection, it was 1.5 minute. No bleeding occurred during the following night. On December 8, 1920, the coagulation time at 11 a. m., or nineteen hours after injection, was 2.5 minutes, and at 7 p. m., or twenty-seven hours after injection, 2.5 minutes. The patient lost his average amount of blood during the following night. On December 9, 1920, the coagulation at 11 a. m., or forty-three hours after injection, was 7.5 minutes. December 10, 1920, the patient bled moderately during the preceding night. He refused further drawing of blood for coagulation tests. On December 14, 1920, at 10:15 p. m., the patient had a very profuse epistaxis, losing about a quart of blood. He was collapsing, and as an emergency measure Dr. Alexander G. Davidson, of the house staff, injected again intravenously twenty c. c. of a thirty per cent. solution of sodium citrate. The coagulation time before injection was eight to nine minutes. The bleeding had ceased before the beginning of the injection, which was used with the object of preventing a repetition of the hemorrhage. On December 15, 1920, there had been no bleeding since the previous night. Coagulation time at 1:30 p. m., i. e., fourteen and a half hours after injection, nine minutes. Since that time the patient has been lingering on and refusing any kind of medication.

This case was interesting to us because it gave us the chance to study the effect of intravenous injections of sodium citrate. Although no definite improvement of the nasal hemorrhages could be noted, yet the facts brought out by Neuhof and Hirshfeld as to the coagulation time of the blood are of such value that the method should be tested in other severe hemorrhages, especially in those occurring after tonsillectomy, etc. The change in the coagulation time of the blood in our case was remarkable, and it was noticed each time an injection was made. Thus, for example, at the very first trial the coagulation time before the injection was sixteen minutes. Three hours later it had gradually come down to only 1.5 minute. The effect was similar in the following attempts. There is one precaution I should like to emphasize, and one that should never be forgotten: that is, the injection of sodium citrate is to be made very slowly. The fact established by the authors "that sodium citrate is a very dangerous drug when injected intravenously without observing the precautions," i. e., to administer it very slowly and intermittently, should be a guide for everyone doing that work.

In this respect sodium citrate may be compared to another very useful drug, adrenalin. I have pointed out the great danger of injecting adrenalin rapidly into places from which it can be easily and quickly carried to the central nervous system by means of the lymphatics or veins. The mucosa of the nasal septum and its vicinity are especially dangerous localities for the rhinologist. Immediate death may ensue, and has occurred in such cases, and it is our duty to guard the patient against this danger.

REFERENCES.

1. Steiner, Walter R.: Hereditary Hemorrhagic Telangiectasia, *Archives of Internal Medicine*, 1917, p. 194.
2. Neuhof, Harold, and Hirshfeld, Samuel: The Slow Intravenous Administration of Large Doses of Sodium Citrate, New York Medical Journal, January 15, 1921.

24 West Eighty-eighth Street.

Stenosis of the Esophagus*

By THOMAS EDWARD CARMODY, M. D.,
Denver, Colo.

Except as a matter of personal interest and investigation, there is little excuse for the presentation of a paper of this character, as most of us are familiar with the writings of Jackson, Mosher, and Johnson. To add anything to their works is indeed a task. However, it is with the hope that your attention may again be called to the various points contained in their valuable contributions, and without claim to anything particularly original, that I present this paper.

EMBRYOLOGY.

The esophagus is developed from the short piece vorderdarm between the pharynx and the stomach. During the fourth week it begins to lengthen out, and by the end of the fifth has become a cylindrical tube of considerable length. As regards its further history, we have little information. Minot observed that during the fourth to sixth month it has usually four well marked ridges formed by its mucous membrane, and that below the larynx these ridges are so arranged as to give the cavity of the esophagus as seen in cross sections the outline of a Greek cross, which was observed by Kolliker. At four months the inner circular coat and the outer longitudinal coat are clearly differentiated.

The epithelium of the esophagus at four months consists of numerous layers of clear cells, but at certain points some of the cells at the free surface have a granular protoplasmic appearance, a somewhat cylindrical form, and bear a crown of cilia. The presence of cilia in the human embryo of eighteen to thirty-two weeks was discovered by E. Neuman.

Balfour records that in shark embryos the cavity of the esophagus is entirely obliterated about the time the fourth gill cleft is formed, and so remains for a long time; the obliteration is effected by the growth of the entodermal epithelium. That the entodermal canal is for a time in teleost embryos a solid cord, has already been stated, and accordingly we find in them the esophagus without a lumen during certain stages. De Meuron states that the obliteration can be observed in anura just after the larva hatches; in lizards, and in the chick embryo of five and a half days—in lizards the obliteration is complete. W. Opitz states that part of the lumen is closed in the human embryo, as in the shark and other lower forms, and concludes that the amniotic fluid cannot be swallowed by the fetus.

ANATOMY.

The esophagus, or gullet, is a muscular canal about twenty-three cm. in length, its walls continuous above with the pharynx, and below blending with those of the stomach. Its upper end is opposite the upper border of the cricoid cartilage, or opposite the intervertebral disc between the fifth and sixth vertebræ. It descends along the front of the spine through the posterior mediastinum, passes through the diaphragm and, entering the abdomen, terminates at the cardiac orifice of the stomach opposite the ninth dorsal vertebra. The general direction is vertical, but it presents three slight curvatures in its course. At its commencement it is placed in the median line, but inclines to the left to the root of the neck, where it gradually passes to the median line to deviate toward the left and anteriorly to its opening in the diaphragm. It also presents an anterioposterior flexure corresponding to the curvature of the cervical and thoracic portions of the spine.

The esophagus is the narrowest part of the alimentary canal, being most constricted at its beginning and where it passes through the diaphragm. This description, while correct for most cases, may not entirely apply, as in some instances we are able to obtain a view from the opening almost to the cardia in a straight line, while in others the variation from the above may be slightly toward the more tortuous.

Killian first called attention to the fact that the tonic sphincterlike occlusion of the superior extremity of the esophagus is confined to the region of the lower border of the cricoid cartilage where the lowest transverse bundle of fibres of the inferior constrictor of the pharynx forms a lip shaped prominence on the posterior wall. An idea of the sphincterlike action of this muscle can only be obtained endoscopically in the living subject. It represents the lower limit of the pharynx and the upper end of the esophagus, and is supported in front by the cricoid plate and posteriorly by the vertebral column, to which it is attached by the pretracheal and prevertebral fascia. Laterally we find the thyroid gland.

---

*Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

Mosher calls attention to the thinning of the fibres at the lower border, leaving a triangular area below this fold, and, further, calls attention to the similarity between the projection of this inferior constrictor and the superior constrictor projection in the nasopharynx, forming Passavant's fold.

While the cervical portion lies close to the spine, as does also the superior thoracic portion in its close relation to the posterior mediastinum, the lower thoracic passes in front of the aorta, which separates it from the spine.

STRUCTURE.

Three coats are described: an external muscular, middle or areolar, and internal or mucous.

The muscular coat is composed of two planes of fibres of considerable thickness, an external longitudinal and an internal circular. The longitudinal fibres are arranged at the upper end in three bundles. The anterior bundle is attached to the cricoid plate. The lateral bundles are continuous with the fibres of the inferior constrictor; as they descend they blend together and form a uniform layer, completely covering the tube.

The circular fibres are continuous with those of the inferior constrictor, while their direction is transverse in the upper and lower portions of the tube. They run obliquely in the central portion. Cunningham describes accessory strips of muscle fibres passing between the esophagus and pleura where it covers the thoracic aorta or the root of the left bronchus, the back of the pericardium, or more rarely the corner of the mediastinum, and still more rarely, other accessory fibres. The muscular fibres in the upper part of the esophagus are of a red color and consist chiefly of the striped variety, but lower down are entirely nonstriped fibres. The areolar coat is very thin and simply connects the mucous and muscular coats. The mucous coat is thick and of a reddish color in the upper portion, fading to a pale pink below. It is disposed in longitudinal folds which disappear on distention of the tube. Its surface is studded with minute papillæ and is covered with a thick layer of stratified pavement epithelium. Beneath the mucous and next to the areolar coat is a layer of longitudinally arranged, nonstriped muscular fibres. Very few of these are found at the beginning, but in the lower part of the tube they are found in large numbers.

Small compound racemose glands are found throughout the whole length of the tube in the submucous tissue, opening by long ducts. They are especially numerous around the cardiac opening.

BLOOD SUPPLY.

Very little can be found regarding the bloodvessels in our textboks on anatomy, but the upper portion is supplied by branches from the ascending pharyngeal vessels, which anastomose with branches received from the aorta. These latter branches, which apparently are quite numerous, supply the middle portion and anastomose with the gastric artery, which supplies the lower end and which passes to the left side of the cardiac orifice.

LYMPHATICS.

The lymphatics of the esophagus form a plexus around the tube, traverse the glands of the posterior mediastinum, and communicate with the deep lymphatics at the root of the lungs, terminating in the thoracic duct.

MOBILITY.

The esophagus seems to be comparatively fixed as far as lateral movements are concerned, at its upper end and where it passes through the diaphragm. Jackson has proved that the upper portion may be moved several centimetres, and many workers have observed wide movement under complete anesthesia.

LENGTH.

The length of the esophagus, as stated before, is about twenty-three cm., but this is variously given by different authors, depending upon the age of the patient, seven to twenty-five cm. It seems that these measurements are not as important as the measurement from the teeth to the bifurcation, and from the teeth to the cardia, as these measurements mean more to the operator. The distance from the incisors to the bifurcation of the trachea is from twenty-four to twenty-six cm. in the adult, the lower figure being for women and the higher for men. Mosher gives the length of the esophagus from the incisor teeth to the cardia the wide variation of thirty-six to fifty-nine cm. in men, and thirty-two to forty-one cm. in women.

DIAMETER.

While the esophagus is smaller in diameter than any other portion of the alimentary canal, it varies in size in different portions, being smallest at the upper opening. It has, however, three other points of constriction, the second being where it passes behind the arch of the aorta when it is compressed between the aorta and the spine; third, where it passes behind the left bronchus at the level of the fifth thoracic vertebra, and, last, where it passes through the diaphragm. Not being supplied with cartilaginous rings, like the trachea, it collapses on itself, leaving its smallest diameter from before, backward, and, viewed from above, simply presents a slitlike opening.

DISTENSIBILITY.

All constrictions of the esophagus are dilatable. The superior or cricoid is less so than the others. The normal esophageal wall has been proved by Jackson to stretch two centimetres without rupture. The lumen of the esophagus increases on inspiration and decreases on expiration. This is found to be of distinct advantage in passing tubes. The following are Mosher's tables compiled from Stark:

DIAMETERS OF THE ESOPHAGUS AT THE FOUR CONSTRICTIONS.

Constriction.	Diameter.	Vertebra.
Cricoid	Transverse 23 mm. (1 in.) Anteroposterior 17 mm. (¾ in.)	Sixth cervical
Aortic	Transverse 24 mm. (1 in.) Anteroposterior 19 mm. (¾ in.)	Fourth thoracic
Left Bronchus	Transverse 23 mm. (1 in.) Anteroposterior 17 mm. (¾ in.)	Fifth thoracic
Diaphragm	Transverse 23 mm. (1 in.)	Tenth thoracic

Length of the esophagus at different ages.

	Teeth to cricoid.	To bifurcation.
Birth	7 cm. (2¾ in.)	12 cm. (4¾ in.)
1 year	10 cm. (4 in.)	14 cm. (5½ in.)
2 years	10 cm. (4 in.)	15 cm. (6 in.)
5 years	10 cm. (4 in.)	17 cm. (6¾ in.)
10 years	10 cm. (4 in.)	18 cm. (7 in.)
15 years	14 cm. (5½ in.)	23 cm. (9 in.)
Adult	15 cm. (6 in.)	26 cm. (10¼ in.)

To cardia.	Length of whole esophagus.
18 cm. (6¾ in.)	10 cm. (4 in.)
22 cm. (8¾ in.)	12 cm. (4¾ in.)
23 cm. (9 in.)	12 cm. (5⅛ in.)
26 cm. (10¼ in.)	16 cm. (6⅜ in.)
28 cm. (11 in.)	18 cm. (7 in.)
33 cm. (13 in.)	19 cm. (7½ in.)
40 cm. (15¾ in.)	25 cm. (10 in.)

For memorizing the length of the esophagus at different ages, the following approximate figures are given:

Birth	7 in.
5 years	10 in.
15 years	13 in.
25 years	16 in. (Stark.)

Add three inches for every five years.

Diameter of tubes for different ages.

To 8 years	9 mm.
From 9 to 15 years	11 mm.
From 17 years	12 to 14 mm.
Adults	14 mm. (Average)

The esophagus begins six inches from the incisor teeth, back of the cricoid cartilage at the sixth cervical vertebra. It is ten inches long and goes through the diaphragm at the tenth thoracic vertebra, sixteen inches from the teeth. It is crossed by the arch of the aorta back of the middle of the first piece of the sternum, ten inches from the teeth. The measurements to be remembered in connection with it are, then, six and ten.

STENOSIS.

Strictures of the esophagus, like foreign bodies, are found most frequently in the upper third. The theory of Jackson, that this is due to spasm, seems the most reasonable. Why we should have a greater number of carcinomas in the lower portion may be due to the fact that the irritation, if such is the cause, is not so intense, and extends over a long period. The passing of the esophagoscope in the case of stricture is not different from that employed in cases of foreign bodies.

The normal esophagus appears through the esophagoscope to be bright red or pink, varying in different individuals, but appearing lighter on good illumination than when the tube is poorly lighted. When the membrane has been traumatized, the color varies from deep red to grayish white, depending on whether the membrane has become edematous. The appearance will vary somewhat according to the size of the tube employed, as with a small tube, on account of the folds of mucous membrane, it will be somewhat darker than when the large tube is used, which stretches and blanches the mucous membrane. While we do not fear the passing over and beyond a foreign body with a large tube, we must be extremely careful, in the case of stricture, that the large tube does not dilate the esophagus to such an extent as to produce rupture. The tube should always, where possible, be passed so that the examiner can see ahead of it and be able to see the lumen before advancing the tube. Ballooning the esophagus by means of a rubber bulb attached to the Mosher tube has been found valuable in my hands.

As interference with physiological action is more important in making a diagnosis in case of stricture than in foreign body, a few words as to the physiology of the esophagus will not be amiss. The office of the esophagus is to carry food from the buccopharyngeal cavity to the stomach by the act of swallowing. This act is divided into two phases, the buccopharyngeal and the esophageal phase. The first is voluntary and consists in movements of the tongue, floor of the mouth, soft palate, the hyoid bone, the larynx, and of contraction of the pharyngeal constrictors, while the esophageal, also a peristalsis, is an involuntary act. The time taken for the first phase is estimated at three fourths of a second, while the second is estimated at six seconds. It is stated by Mosher and others that peristalsis is three times as rapid in the striated third of the esophagus as in the lower two thirds. This is important as throwing light on the slow progress of the bismuth bolus used in connection with fluoroscoping these cases, and the repeated attempts of the patient to start another peristaltic wave.

ANOMALIES.

The most frequent malformation of the esophagus is obliteration. Van Cnyk in 1824 delivered a child which died on the third day from malnutrition. At postmortem it was found that the inferior two inches of the esophagus was merely a ligamentous cord. Poro describes a case of congenital obliteration of the esophagus which ended in a cecal pouch about one inch below the inferior portion of the glottis, and from this point to the stomach measured only one inch. There was a communication with the trachea. Brentano describes the case of an infant which died ten days after birth, whose esophagus was divided into two portions, one opening into a bronchus and the other into a cul de sac. A case of duplication is described by Blasius. Grashing saw a case of dilatation resembling a bird's crop.

Stenosis of the esophagus includes many of the diseased conditions of this organ. We may classify esophageal stenosis as primary and secondary. Primary stenosis includes inflammatory thickenings due to infection or trauma, or edema following either. Secondary stenosis includes cicatricial contraction following ulcers or trauma, new growths, either intrinsic or extrinsic, pressure from without by new growths, hypertrophies, aneurysm, or abscess.

Primary stenosis may be simulated by foreign body and without history may be difficult to diagnose. Contrary to foreign body, the diagnosis of stenosis is usually made before the patient consults an endoscopist. Foreign bodies are usually unsuspected, while the history is usually sufficient to make a diagnosis of stenosis, while in many cases an attempt to pass a stomach tube has already been made. In all other conditions with which this paper deals, endoscopic examination, if performed early, may be of great value, both for purposes of diagnosis and treatment.

Fluoroscopic examination may be used to locate the position of a foreign body or its extent before endoscopic methods are used, or during the passage of the tube. If used before, the barium meal is used in conjunction, but if used in conjunction with tube, either dilators which obstruct the light, or probes, can be used to advantage. The great majority of our cases do not require this help, but it is of value in many, when it is not absolutely necessary.

Dilatation, once the diagnosis is made, depends upon whether the condition is one which will be improved by mechanical dilatation, or whether other means are to be used.

Those cases without anatomical change in which there are troublesome spasms require great patience and constant observation, as there may be a change not visible to the eye. Another class of cases which may give confusing symptoms is esophageal varix. Observation of this later may call attention to abdominal organs, especially the spleen and liver, disease of which may interfere with circulation in the lower part of the esophagus.

Simple annular constrictions are easily dilated, if not of too long standing, by Jackson's flexible dilators. Constrictions of some length may require the use of Mosher's dilator on some portions, and the use of Plummer's graduated dilators. Dilating through the esophagus is most satisfactory and is less dangerous.

Malignant tumors of the esophagus are treated successfully by radium applied through the esophagoscope, for in no other way can we be absolutely sure of reaching the diseased area, not even by using the fluoroscope.

Deep röntgen rays are of value in controlling pain. Dilatation of malignant structures should not be done. However, one may have a simple cicatricial stricture in the same esophagus, such as I have seen, and this may be dilated without harm. Any unnecessary manipulation of a malignant growth is inadvisable because of the danger of producing metastasis.

Case I.—G., a dentist who had been a patient for years, consulted me on May 21, 1919, on account of a difficulty in swallowing which had extended over a period of several weeks. He came to Colorado for pulmonary tuberculosis ten years ago, but had apparently recovered and was able to follow his profession for the last eight years. He had been a very heavy drinker for years. The Wassermann test, as well as the rest of the history, was negative.

I esophagoscoped him under ether May 26, 1919, and found an ulcerated area one by two cm. on the anterior and right wall at cricoid constriction which appeared to be a simple irritative ulcer. Another ulcer or several ulcers surrounded by cicatricial tissue showed a beginning about five cm. below the aortic constriction. The tube, a Mosher No. 3, was passed by the upper ulceration, which was painted with a three per cent. tincture of iodine, with little difficulty, but could not pass the second, although the smallest Jackson flexible bougie passed easily. While this did appear to be of the same character as the superior, I did not feel justified in removing a section, and contented myself with thorough swabbing with iodine, and returned the patient to bed.

The patient was greatly relieved for four days, when spasms returned with pain. Dilatation of upper constriction at intervals relieved, but after dilating lower two or three times it proved too painful and was not persisted in.

Under ether, August 2nd, he was esophagoscoped and the upper ulcer was found entirely healed, while some healing had taken place in the lower with resulting scar tissue, to such an extent that the smallest Jackson dilator would not pass. Gastrotomy was advised, but the consultant disagreed.

The reaction was severe for three days, after which deep röntgen rays were used at intervals to relieve spasms and pain.

Shortly after this he consulted a surgeon, who promised to use radium, but for some reason did not use it. Radium was subsequently used, but too late to be of value. It was applied by means of a stiff bougie, with the aid of the fluoroscope, but as to the dose and time of application I am not informed.

X RAY REPORT.

By Frank B. Stephenson, M. D.

Report on the case of Dr. W. O. G., referred to me May 21, for x ray examination of the esophagus: The first several boluses of viscid medium proceeded to the cardiac orifice in a normal manner where a temporary obstruction occurred, which was relieved by gradual expulsive efforts of the esophagus. Following this the patient experienced a sense of discomfort beneath the sternum, and part of the medium swallowed subsequently collected in the esophagus above an apparent constriction, situated at about the level of the bifurcation of the trachea. The constriction was not ringlike, but gave more the appearance of an organic defect. The medium was present and the picture unchanged for over half an hour. A two hour plate showed the esophagus clear with no remnants of barium present. This phenomenon of the apparently free passage of the first few mouthfuls, with spasm occurring subsequently, was observed at two examinations. There was no evidence of extrinsic pressure. The diagnosis from an x ray point of view would be in favor of an ulcer or an organic stricture rather than reflex spasm.

AUTOPSY REPORT.

By Philip Hillkowitz, M. D.

Autopsy held on the body of Dr. W. O. G. Body greatly emaciated. The muscular development was poor. The pericardium was slightly adherent to heart, several whitish spots on the epicardium, nothing noteworthy in walls or valves. The left lung was adherent to the diaphragm; a calcareous nodule the size of a hazel nut was found in the axillary line of the upper lobe; peribronchial lymph nodes enlarged. The esophagus showed scar tissue on the anterior and right lateral wall at the level of cricoid cartilage, and ulceration of posterior wall together with a circular ring of hard tissue encircling the tube about two thirds of its circumference anteriorly to an extent of three cm. of its length, at a level five cm. below the transverse arch of aorta. There was nothing noteworthy in stomach or intestine. The kidneys were pale on section. The spleen was converted entirely into a soft, putrid mass. Microscopic examination of growth in esophagus revealed a scirrhous carcinoma. Pathological findings: Adhesive pericarditis; healed tuberculosis in left upper lobe; tuberculosis infiltration and cavity formation in right upper lobe; scirrhous carcinoma of esophagus in middle portion; necrosis of spleen; chronic parenchymatous nephritis. Cause of death: Carcinoma of esophagus; necrosis of spleen.

CASE II.—Seen on author's service in Denver City and County Hospital. There had been a constant loss of weight for the last three months, since the patient's tonsils had been removed—forty pounds in all. Since the operation the patient had not been free from pain in right tonsillar fossa. Pain had been especially severe on swallowing, but food had reached the stomach without difficulty. A diagnosis of tuberculosis was made, and an examination of the larynx asked for. Examination revealed a mass in the region of the lower lobe of right tonsil and base of tongue occluding the superior aperture of the larynx which presented a good view of the larynx with mirror. The cervical lymph nodes were slightly enlarged. A clinical diagnosis of carcinoma was made, although the Wassermann reaction was negative. An examination of the section removed was made by Dr. Helen Craig. Carcinoma of the prickle cell type was reported. Collapse and death took place within forty-eight hours. Autopsy by Dr. E. R. Mugrage showed carcinoma of base of tongue and right wall of pharynx, extending into esophagus, which was only slightly constricted.

CASE III.—Seen in consultation with Dr. Danahey at St. Luke's Hospital. The patient, a pale, emaciated woman of forty-five, had difficult swallowing and regurgitation at times for last three or four weeks. Examination under light ether anesthetic with Mosher No. 4 esophagoscope revealed a small mass immediately above the cardia, with only slight contraction of tube. The condition of the patient did not permit treatment, and death took place about sixty hours later.

Autopsy report by Dr. E. R. Mugrage: Carcinoma of esophagus with metastatic mass in cardiac end of stomach.

Dr. L. Frank, who saw this patient four months previously, told me that all symptoms were then referred to the stomach. X ray examination revealed stenosis of the esophagus. Dr. Frank advised gastrotomy, but operation was refused.

METROPOLITAN BUILDING.

Double Mastoid Operation—Acute Thyroadrenal Exhaustion*

By JAMES G. CALLISON, M. D.,
New York.

Mortimer B. was first seen late in May, 1918, at the Manhattan Eye, Ear, Nose and Throat Hospital, when he was treated for a retropharyngeal abscess. He had been suffering from sore throat and recurring furunculosis of the auditory canals for about two months, going from one physician to another, having his throat examined and the furuncles opened. At that time the retropharyngeal abscess was incised and he was sent into the hospital for pharyngeal irrigations. On June 17, 1918, he was again seen, suffering from a recurrence of the furuncles in the auditory canals. Wet packs were used daily at this time until the furuncles healed. About May, 1919, he underwent an adenoid and tonsil operation at some hospital in Boston, but the adenoids were incompletely removed and he remained a mouth breather.

On January 31, 1920, when he was two and a half years old, he was again brought to me with a running nose and a right acute otitis media. The drum was incised under ethyl chloride. Then on February 3d a left acute otitis media developed and that drum was incised. He also underwent myringotomies on February 12th and 16th, that on the former date without anesthesia. In order to provide better nasal and aural drainage, on February 19th the remainder of the adenoids and a postnasal polyp were removed. This latter, as well as could be determined in the presence of the bleeding, had its attachment somewhere behind and above the right Eustachian bulb. From February 31st on he was seen every other day, the ears being cleansed, dried and inspected. On every attempt to dry the ears he fought violently, thrashing about with all his strength, and it was not possible to care for the ears without causing great pain. As a result of all this manipulation he became thoroughly afraid of me or anyone whom he suspected of being a doctor. These many infections showed a patient below par so far as his resistance was concerned and, as a result thereof, one with ample reason to be afraid of a doctor.

In spite of every effort, both ears went on to a mastoid infection. Mortimer B. was in the hospital four days prior to a double mastoid operation on February 27th, and nine days thereafter. The hospital surroundings added materially to his fright—the absence from home, the strange surroundings, the presence of the nurses, all contributing their quota. When I entered the room where he was, especially at night after the operation, his pupils dilated, the palpebral fissure widened, the face flushed about the cheeks and over the malar bones, while he became deathly pale about the mouth and screamed continuously: "No more doctor! No more doctor!" a picture of abject, extreme fright. The outer dressings were changed on the third day after the operation, and a complete dressing and removal of the stitches, under general anesthesia, on the fourth day.

---

*Read before the New York Academy of Medicine, Section in Otology, December 10, 1920.

Union of the primary incision was not firm at the time of this full dressing, but no note was taken of the fact at that time. The wounds received daily dressings thereafter while he was in the hospital. For the first four or five days the operative wounds seemed to be doing well, except that they were slow in healing, and there were some clip abscesses in the skin which did not seem inclined to heal. About the eleventh day after the operation I began to feel that the wound was not doing well. From that time on the patient went to pieces very rapidly, so far as the condition of the wound and his mentality were concerned. On the fifteenth day, postoperative, the edges of the wound were everted, angry looking, mouse eaten in appearance, and the wound was breaking down along the whole length of the original incision. The granulations in the mastoid cavity had not begun to cover the exposed bone, and those granulations that had formed were indolent looking and were giving off a glairy, mucuslike exudate. The clip abscesses had extended until they were from three to six millimetres in diameter and most of them communicated through the subcutaneous tissue with each other and with the edge of the broken down primary incision. At the same time the external auditory canal was pouring out pus. Examination of smears from the mastoid wounds showed the presence of a short streptococcus, the same infection as had been present in the aural discharge previous to the operation.

The mental condition of the patient at this time was on a par with the physical condition of the wounds. His muscles were weak, and he seemed to have difficulty in balancing himself, even more than his weakness would account for. It was totally impossible to elicit any facial expression from the child. He cried, but without the facial or vocal expression of pain. Placed on the floor after completing a dressing, he planted his feet far apart, seemed to take no interest in anything about him, and with a vacant stare and his head falling forward, let the thick, mucinous saliva drool from his mouth, totally oblivious to his surroundings. At home he remained continuously in bed or on his mother's lap and moaned "Ah baby!" or screamed "no more doctor!" and took no interest in his toys or the doings of his little companions. At this visit (the fifteenth day) the interior of the wounds, the clip abscesses and all ulcerated areas were painted with ten per cent. nitrate of silver solution, the wound was packed with five per cent. iodoform gauze, and an external ichthyol ointment dressing was put on. On the theory that the patient was suffering from thyroid exhaustion, the syrup of the iodide of iron was prescribed to supply some immediately available iodine to the thyroid gland. The same dressing was repeated on the sixteenth and seventeenth days, and on the latter date he was sent to Dr. Marshall C. Pease for examination, with a suggestion as to my diagnosis of acute thyroid exhaustion. Agreeing with me as to the probable cause of the breakdown, Dr. Pease placed the boy on one tenth of a grain of dried thyroid gland substance three times a day. By the nineteenth day the wounds and the mentality had both begun to show some slight improvement, and the ichthyol and silver nitrate dressings were both discontinued, the wounds being dressed with a five per cent. iodoform gauze. At this time the wounds had thrown off some of the unhealthy granulations, the mucuslike exudate had disappeared, and the exposed bone had begun to granulate over in places. The clip abscesses also looked healthier and showed some evidence of the initiation of the healing process.

There was a slow, continued improvement from this time till March 26th, twenty-eight days postoperative. On that date it became necessary to send Mortimer B. to a colleague for dressing. In making this change the thyroid gland substance was inadvertently discontinued, and the improvement in the patient's condition also stopped. During the period from March 26th to April 16th this colleague made every possible effort to induce healing, but with practically a total failure. He was compelled to conclude that he was dealing with an improperly performed operation, in which all the necrotic bone had not been removed from the mastoids. When he returned to me on April 18th the patient had a little more discharge from the operative wounds and from the auditory canals than when I had last seen him, and the granulations were slightly more unhealthy. At this time the operative wounds on both sides opened directly into the attic, there was still bone on both sides uncovered with granulations, the clip abscesses on the right side had scabbed over but did not look healthy, on the left side they were still open ulcers.

I immediately began an attempt to destroy the unhealthy granulations in the wounds and to induce the formation of granulations over the exposed bone. The wounds were touched with nitrate of silver, first ten per cent., then twenty-five per cent., and finally a saturated solution. Silver nitrate at first, and then tincture of iodine, were injected into the attic through the external wounds in an attempt to destroy the infection in the middle ear. These solutions were also forced into the external auditory canals and into the pharynx through the Eustachian tube. The dressing was finally completed by a hard pack in the operative wound. By this means I was able partly to destroy the excess of granulations on both sides, but it was not possible to force the formation of granulations over the bare bone present. Syrup of the iodide of iron was again prescribed as a tonic, as this had been discontinued in my absence. This treatment was continued until April 30th, and I was able to secure a slow improvement in the condition of the wounds, mainly in that they were cleaner.

During this time the mother called attention, without any prompting or suggestion, to the presence of Sergent's adrenal white line. This is produced by gently stroking the skin with a blunt, smooth object. Almost immediately the surface stroked turns white and remains so for three or four minutes. While the central part of the area is white, the border is usually very pink. The test is usually made by stroking the abdomen with a fountain pen. In this case it was made by the baby rubbing its face with its hand, the hand leaving a white spot behind. There had been from the middle of March, when the thyroid gland substance was first prescribed, a very slow but steady improvement in the mental and physical condition of the patient.

On April 30th I prescribed an adrenospermin compound. This is a capsule containing thyroid substance, one twelfth of a grain; adrenal substance (total gland), one quarter of a grain; spermin, one grain, as an adjuvant to the adrenal substance, and brain substance for its organic lecithin. These were to be taken one capsule four times a day. At this time, sixty-three days postoperative, the condition of the patient was as follows: Both ears discharging pus from the external auditory canals and the operative wounds; small operative wounds reaching the attic on both sides; bare bone at the bottom of both operative wounds, just posterior to the attic, where the antra had been opened. About twenty millimetres above the operative wound on the left side was an open ulcer eight millimetres in diameter, where the original incision had broken down. On the right side there had been a similar breaking down and ulceration. This had scabbed over, but the healing had stopped there and the scab had never been cast. Mentally, the patient seemed to lack energy and initiative.

In addition to the ear condition, Mortimer B. had a running nose when first brought to me in January. This had persisted and gradually became worse during all the time he was under treatment, at times assuming the form of a membranous rhinitis on anterior rhinoscopy. It was at all times so severe and resistant to treatment that I was of the opinion that he was suffering from an indolent ethmoiditis. This condition had not perceptibly improved when he was placed on the thyroadrenal combination. From now on it seems best to quote the day to day notes on this patient:

May 2d: Left ear dry; free discharge operative wound. Mercurochrome-220 in external wound and dropped in ears. (From this date on as long as packing was required in the external wounds all the dressings were made by filling the wounds with mercurochrome-220 and packing gauze into the solution. These drops were also used in the external canals.)

May 4th: Left ear still dry; operative wound closed; some pus and considerable bleeding granulations in it when forced open; less discharge from right ear; operative wound cleaner; mentality and general physical condition improving.

May 10th: Still some pus in operative wound of left ear when it was forced open; open ulcer above operative wound of left ear had a good, healthy scab over it; purulent rhinitis improving.

May 12th: Left operative wound not disturbed. Could not find bare bone at bottom of right operative wound, and there was only a slight discharge of pus from the operative wound and from the canal; nasal condition improving; breathed through his nose part of the time. Patient very lively, mentally and physically; was all over the house; helped to arrange layout for the dressing, and insisted on bossing the work of dressing the wound. Sergent's adrenal white line had disappeared; appetite good; slept well.

May 14th: All packing omitted from the right operative wound.

May 20th: Very slight discharge right ear canal and operative wound; cocoon dressing; mother reported baby slept with mouth closed.

May 26th: Ear and nose both better; no discharge from or membrane in the nose; external operative wound almost dry; packing in auditory canal to dilate collapsed superior canal wall.

June 10th: External sinus persisted; collapse of superior canal wall responded slowly to attempts to dilate by packing.

June 19th: Canal fair opening; mucous discharge; external fistula filled with Beck's bismuth paste.

July 15th: Canal packing discontinued; very slight discharge in middle ear.

August 5th: Small fragment of bone removed from the fundus right auditory canal, evidently a sequestrum from the superior canal wall. This had been acting as a foreign body and keeping up the discharge.

From now on the ear was treated as a case of chronic purulent otitis media, as I have elsewhere outlined (1) and became dry and remained so early in October, two months after the removal of the bone sequestrum.

DISCUSSION AND CONCLUSIONS.

While this is a case report, rather than a discussion, I may be permitted to call attention to the well established fact that extreme fright, severe fatigue and strong emotion have a profound effect on the thyroid gland, the suprarenal gland and the central nervous system. That this disorganizing effect, if long continued, will lead to functional exhaustion and the ill effects of the absence of the important internal secretion of the thyroid and suprarenal gland, seems to require no argument. This being granted, it remains only to point out why I believe this patient was suffering from exhaustion of his thyroadrenal apparatus, and to demonstrate that the final cure was due to the thyroadrenal preparation.

Some new factor in treatment entered the case on April 30th or May 2d that initiated the physical and mental change in this patient that resulted in the initiation of the healing process. On April 30th the thyroadrenal preparation was prescribed. On May 2d the use of mercurochrome-220 in dressing the wound was started. That the healing was due to the thyroadrenal preparation, rather than to the mercurochrome-220, with slight absorption of mercury, I believe to be proved by these facts:

1. The metabolic changes in the bone that retarded or prevented the formation of granulations and healing; the mental deterioration; the muscular weakness, with difficulty in balancing himself and supporting the head on the shoulders, are all of the type to be expected in severe thyroid deficiency. This will practically always be accompanied by suprarenal involvement.

2. Sergent's adrenal white line, if not absolutely pathognomonic of a high grade of adrenal insufficiency, is at least highly indicative of that condition.

3. At two different times this patient was started to improve by measures directed to his internal secretions—once with a thyroid and once with a thyroadrenal preparation. The latter showed the more phenomenal results.

4. The improvement in the mental and physical condition of the patient was more marked than the improvement in the condition of the wound, and even antedated it. This improvement was too rapid to be due to the slight amount of mercury that might have been absorbed.

5. Had the improvement in the condition of the patient been due to the antiseptic effects of the mercurochrome-220 with the absorption of the contained mercury, the result would have been first observed in the operative wound, and secondarily in an open ulcer twenty millimetres above the operative wound. As a matter of fact, the ulcer healed first.

6. Some profound systemic alterant must be called on to account for the rapid improvement and cure of a purulent rhinitis that has persisted from late in January till the first of May, resisting during that time every form of treatment to which it was subjected, and at times becoming a membranous rhinitis in spite of this treatment. I feel confident that this latter result could not be credited to the absorption of the mercury in the mercurochrome-220, but must be placed to the credit of the endocrines administered.

I have formed a very happy opinion as to the usefulness of mercurochrome-220 as a dressing for infected wounds, but I must insist that the final cure of this patient was due to the tonic effects of the thyroadrenal preparation.

REFERENCES.

1. CALLISON, JAMES G.: NEW YORK MEDICAL JOURNAL, June 19, 1920.

206 EAST SEVENTEENTH STREET.

Malignant Diseases of the Nose and Throat with Special Reference to Cancer of the Nasal Fossæ, Nasopharynx and Tonsil*

By WALTER J. M. WURTZ, M. D.,
Buffalo, N. Y.

Tumors of the upper respiratory tract do not differ from those of other parts of the body. Both the nonmalignant and malignant growths are seen. The exact etiology of the malignant tumor is still a question. Among the theories advanced to account for malignant growths is that of trauma, chronic irritation and Cohenheim's inclusion theory, the latter being the one generally accepted. Kelling has advanced a theory in which he believes certain embryological cells of different animals may become deposited by insects in the circulation and that it is the proliferation of these cells which produces a malignant growth. The parasitic theory of cancer still lacks proof.

The etiology of cancer of the nose is similar to that of cancer in other parts of the body. It is found here also that age is a predisposing factor. Carcinoma and epithelioma are more common after the age of forty-five, while sarcoma is more frequently seen earlier in life. It would seem that chronic irritation is a common etiological factor, in that malignancy is more frequently seen in the anterior nares. This is probably due to the fact that this part of the nose is more subject to irritation. In this connection the discussion as to whether polyps are an etiological factor in cancer of the nose is interesting. It is probable, however, that polyps only act by irritation. Frequently also they are found as a result of the secretions from cancer growth. The majority of authorities hold that polyps have no relation to cancer other than that of a secondary rôle. While polyps would seem to have little influence in the causation of cancer it is well proved that papilloma and adenoma are frequently the forerunners of malignancy. As a matter of fact few cases of cancer of the nose can be traced to a direct causative factor and, as in cancer of other parts of the body, in the majority of instances we cannot trace their origin.

The pathological forms of malignant tumors found in the nose may be classified under epithelioma, adenocarcinoma and sarcoma. The epithelioma may be divided into the squamous cell, basal cell, and cylindroma. The squamous cell is to be regarded as being very malignant, while the cylindroma has but low malignancy and is considered by many to be curable. The adenocarcinoma is much less frequent than the epithelioma and it seems to be much less malignant and slower in growth than the epithelioma. In the consideration of this subject we shall discuss cancer occurring in the nasal fossa, the nasopharynx and the tonsil.

The symptoms of cancer in the nasal fossa are due largely to the encroachment of the growth upon the nasal passages. There is practically always partial or complete obstruction. The obstruction, however, varies somewhat in different cases. It may be that the closure at first is intermittent, due to engorgement of the vessels. An obstruction of one side which comes on quickly and persists is usually malignant. Naturally any obstruction due to cancer is progressive. The patient usually snores and the closing of the tear duct will cause the eye to water. As the disease progresses hemorrhages and bleeding occur. This bleeding may be spontaneous or as frequently happens results from blowing the nose or from injuries. These hemorrhages may be so profuse as to endanger life. Almost all cases are associated with a secretion and as ulceration progresses it may become purulent and blood stained. In the last stages, with necrosis, the characteristic odor of necrotic tissue is present.

Pain as a symptom is constant and varies somewhat with the location and extent of tumor growth.

---

*Read before Buffalo Academy of Medicine, October 24, 1920.

The pain may be localized in various portions of the face. In the late stages it may be constant and severe. The voice may also be affected as a result of obstruction. As the tumor progresses there will often be a deformity of the nose. If the extension of the growth is backward it will give rise to difficulty in swallowing, pain in the ear, and bad taste in the mouth. Cachexia is a late development and death usually occurs long before this stage is reached. Infiltration of the neighboring tissues occurs slowly. Inasmuch as the resistance above is less, the extension occurs most rapidly upward. It is here that the lymph vessels and veins extending to the brain become involved. Extension backward is next in frequency, the tumor involving the tissues of the choanæ and pterygoid fossa. Primary cancer of the nose does not show metastasis except by the extension which commonly occurs through the vessels into the brain. The majority of these nasal fossa cancers are the squamous cell epithelioma and much more rarely the cylindrical type is seen. The basal cell epithelioma is also comparatively frequent. In forty-two cases the origin of the tumor was found to be on the septum six times, inferior turbinate nine, middle turbinate twenty-one, roof of nose three, sphenoid bone two, antrum one. From these figures it will be seen that the origin of malignant growths is most common in the middle turbinate region.

The early diagnosis of malignant growths of the nasal fossa may be difficult. The presence of discharge which often is bloody, together with the persistent obstruction to the nasal passage, would be suggestive of tumor. Examination of the nose would disclose the tumor. This is usually reddish gray and granular in appearance, bleeding easily. The differential diagnosis would include gumma, tuberculosis and foreign body. Syphilis is to be distinguished from cancer by the Wassermann reaction and the test of therapeutics. Furthermore, the syphilitic growth will give rise to an offensive purulent discharge almost from the first. Cancer is distinguished from tuberculosis by the presence of tuberculosis elsewhere and the fact that tuberculosis of the nasal fossa is extremely rare. Foreign bodies in the nose may result in conditions which simulate cancer. The probe would disclose the presence of a foreign body or the removal and examination of the granulating tissue would decide the question. Polyps may somewhat simulate malignant growths in that they often result in obstruction, discharge and bleeding. In such an instance the microscope would clear up the diagnosis. The early diagnosis between sarcoma and carcinoma may be difficult. The sarcoma usually occurs in the young individual, is spherical in shape, and more rapid in growth, involving rapidly the bone with which it comes in contact. The carcinoma is more irregular in shape and its surface ulcerating. If the differential diagnosis cannot be made a section of the tissue will decide it.

The prognosis in these cancers is bad. It is more favorable in the cylindroma. There are few cases of recovery on record. The patient usually dies of meningitis or the development of cerebral or meningeal metastases.

The treatment of these cases is most unpromising. There have been several reported cases in which early diagnosis of the growth on the turbinate was followed by recovery after the removal of the turbinate. It is possible that a better understanding and the more scientific application of radium will result in the cure of a certain number of these patients.

Primary carcinoma of the nasopharynx is more common than carcinoma of the nasal fossa. Its development is more insidious. It may occur at all ages, one author reporting cases seen in patients at thirteen, nineteen, and twenty years of age. Statistics would indicate that it occurs more frequently in males than in females. Its presence does not become manifest as early as similar growths in the nasal fossæ. A tumor in the nasal fossa would cause obstruction much earlier than a tumor of the nasopharynx. Furthermore, bleeding would occur much earlier in the exposed tumor of the nasal fossa. As a result cancer of the nasopharynx may develop to a considerable size without giving rise to symptoms attracting the patient's attention. The earlier symptoms of a growth in the nasopharynx may be due to involvement of the branches of the fifth nerve resulting in pain in the ear. A reflex cough is also common and should be regarded with suspicion. The mechanical irritation of the tumor will often give rise to symptoms which are regarded by the patient as being due to catarrh. As the tumor progresses nasal obstruction, hemorrhages and discharge are manifest.

The pain is increased and may be most severe. It may be present in many regions whose nerves are encroached upon by the growth. It is common, therefore, to have pain in the neck, occiput, ear, or the region supplied by the trifacial nerve. Even the opposite side of the head may not be exempt. The patient becomes deaf, the jaws locked, and the neck possibly stiff from the involvement of the vertebral articulation. Speech is necessarily involved. The cranial cavity may be invaded through the cells of the venous channels. The absence of gland metastases is well recognized by all observers. Examination of the nasopharynx may disclose the presence of the tumor even before marked symptoms appear. The appearance of the tumor is practically the same as a similar growth of the nasal fossæ. The finger may be an important aid in diagnosis, as the tumor may be felt in the nasopharynx, and any manipulation causes bleeding. The differential diagnosis will lie mainly in distinguishing between syphilis and myxofibroma. The usual test would eliminate syphilis, and microscopic section would determine between malignancy and myxofibroma. The diagnosis between sarcoma and carcinoma must rest upon the more rapid growth and extensive involvement of sarcoma and the use of the microscope.

The prognosis is of course bad. In a few recorded cases the patients have recovered after operation. The inaccessibility, however, of these tumors places surgery at a disadvantage. Death results from intracranial involvement, cachexia and possible respiratory occlusion.

Cancer of throat and tonsil presents a marked contrast to that of cancer of the nasal fossa and nasopharynx. Stuart Low believes that cancer of the mouth, throat and gullet is increasing at a fearful rate. Four or five such cases may appear in one day in any large metropolitan clinic. It would seem that there is a definite etiological relation between syphilis and cancer of the throat and tonsil. Stuart Low in 1902 had notes of fifteen cases of cancer of the throat in all of which there was syphilis. Since that time he has noted that all others coming under his observation have also shown a syphilitic infection. As to just how syphilis may predispose to cancer is not apparent. It is possible that the disease renders the mucous membrane less resistant. Other predisposing factors noted are buccal sepsis, caries, pyorrhea or gingivitis which result in septic secretions having an irritating influence upon the membrane. In some instances the tonsils are septic. It has been observed that in all cancer patients there is a markedly acid saliva. Males are more frequently affected than females; one observer found that ninety-six per cent. of his cases were in males. Tobacco would seem to be a predisposing factor as practically all victims of cancer of the throat are inveterate smokers. Another factor which would seem of importance is the taking of hot foods. This effect is seen among the Chinese. The women bring the steaming hot rice to their husbands who eat it very hot, while the wives must wait until their lords have finished before they eat. The result is that the food eaten by the women is much cooler and this is said to account for the extreme rarity of cancer of the throat among Chinese women. It has been stated that the majority of the patients with cancer of the throat have always eaten much salt and it is probable that here, too, we have a factor in cancer, in that the salt may dissolve off the protective mucus.

Cancer of the throat and tonsil is usually carcinoma with a tendency to early ulceration. With this ulceration is also associated a peripheral infection, inflammation and edema. This not infrequently leads to a diagnosis of quinsy. The tendencies of these tumors to soften in the centre and discharge a pseudopus adds to the picture of quinsy. The cancer may begin on the tonsils or in the immediate vicinity on the lateral wall of the pharynx. It is often impossible to state definitely the point of origin. The disease may often begin on the uvula, tending to spread over the entire palatin arch. In contradistinction to cancer of the nasopharynx and nasal fossa lymphatic involvement is early. The cancer appears as an uneven mulberry or wartlike growth with a tendency to early ulceration. Frequently the lymph nodes of the opposite side are also involved. As the disease progresses the ulcerating surface becomes large with the tendency to hemorrhage.

Cancer of the tonsil is insidious. Pain is an early symptom usually first noticed in swallowing. As ulceration occurs discharge of pus or blood is common. With the extension of the growth the difficulty and pain in swallowing is greater. In advanced stages swallowing may be impossible. Pain in the ear is almost always seen. This may constitute the principal symptom, which is classified as the otalgic type. With the progressive ulceration and the difficulty in swallowing cachexia appears.

The diagnosis of cancer of the throat is usually easy. Its accessibility makes it possible to secure an early section and the region is easily inspected. The tumor appears at first as a warty growth, reddened and bleeding easily. As the disease progresses the appearance is sufficiently characteristic to make a diagnosis. The differential diagnosis from quinsy will be easily made from the history and by the infiltration of the tumor in the surrounding tissues. The diagnosis between syphilis and cancer is easy, syphilis being established by the Wassermann test and the test of therapeutics. Tuberculosis of the tonsils will rarely enter into the diagnosis, as this condition is extremely rare and there will almost invariably be evidence of involvement of the lungs.

The prognosis is bad. Patients die from starvation, or possibly hemorrhage and infection. Septic pneumonia is a rather frequent terminal event. Edema of the glottis may also suddenly cause death of the patient.

The treatment of cancer of the tonsil must be, as in cancer of other parts of the body, largely prophylactic. The frequency with which cancer of the throat is associated with syphilis should ever be kept in mind. Tobacco users should be warned and only a moderate indulgence should be urged. It is probable that the propaganda for the better care of the teeth may for future generations bear fruit in the decreasing number of cases of cancer. The use of very hot or highly seasoned foods should be warned against and every means should be used to keep the mouth in a healthy condition. The treatment of the growth by surgery is almost useless. Even though the primary growth can be removed, the early lymphatic involvement will result in the progressive development of the tumor. The use of the cautery may possibly prolong life and give a certain amount of relief from the bleeding. The use of radium early gives some promise of help, but here again the early lymphatic metastases will probably give radium but limited value.

REFERENCES.

Carter: Primary Carcinoma of the Inferior Turbinate with a Report of a Case, *Medical Record,* March 16, 1907.

Klempter: Cancer of Nasal Fossa, *Ibid,* February 22, 1908.

Thomson, St. Clair: Cure of Two Intranasal Tumors, *Lancet,* May 13, 1916.

Jackson, Chevalier: *Journal A. M. A.,* August 10, 1901.

Oppikefer: *Arch. für Laryngol.,* 1913, V. xxvii, p. 526.

Ingermann: *American Journal of Otology, Rhinology, etc.,* 1903, V. xii, p. 700.

Darnall: *Journal A. M. A.,* January 31, 1904.

Holmes: *Laryngoscope,* 1908, V. xviii, p. 623.

Alexander: *Annals of Otology,* 1914, V. xxiii.

Ridout: *British Medical Journal,* 1914, V. 1, p. 1017.

Gatewood: *Journal A. M. A.,* 1916, V. 1xvi, p. 449.

Kelsey and Brown: *Annals of Otology,* 1913, V. xxii, p. 1147.

Coley: *Surgical Clinics,* Chicago, 1915, V. 1v, p. 1147.

Stout: *Laryngoscope,* 1916, V. xxvi, p. 1075.

M'Coy: *Transactions American Laryngological Society,* 1919.

Low, Stuart: *Practitioner,* 1917, V. 99, p. 122.

Dickenson: *Pennsylvania Medical Journal,* July, 1918.

Kyle, J. J.: *Diseases of Ear, Nose and Throat.*

Phillips: *Diseases of Ear, Nose and Throat.*

Kyle, D. B.: *Diseases of Ear, Nose and Throat.*

Knight and Bryant: *Diseases of Ear, Nose and Throat,* Second Edition.

562 Delaware Avenue.

Fluoroscopic Bronchoscopy, Esophagoscopy, and Gastroscopy*

By ROBERT C. LYNCH, M. D.,
New Orleans, La.

I have selected fluoroscopic tube work for my text with the relation of a few instances in which it was apparently impossible to proceed except for the valuable information and guidance as furnished by fluoroscopic tube work and by the x ray plate. In 1913 I described my first experience of fluoroscopic bronchoscopy consisting of the extraction of a nail low down in one of the terminal bronchi of the stem to the lower lobe on the right side, and this at least was one of the first case reports of this technic. During the last two years I have had several occasions to use this combination for the successful removal of foreign bodies from the lungs, and I have employed it in one esophagus case and in two stomach cases. These form the basis of this report.

The bronchus cases were four in number, all of foreign bodies, long retained, which, as is usual, particularly with metallic substances, had worked their way to as near the periphery as space would permit, and when the final destination was reached had begun the slow destruction of surrounding tissue with abscess formation. Then, Nature's effort to stop this process resulted in a thickly walled abscess cavity being formed which I found in each of the four cases.

Case I. — A little boy, playing doctor with his little friend, was gagged by the brushing of the posterior pharynx with the head of a millet grass broom which broke off and was insufflated into the trachea and down into the depths of the right bronchus. Procrastination, ill advice, tuberculosis, sepsis, followed in the usual order in such cases, until finally, after two and a half years, it was decided to consult someone who might possibly do something. He was in a state of profound sepsis, with high temperature, emaciation, toxemia, and an abscess between the fifth and eighth ribs in the position represented by the very terminal bronchi from the main stem to the lower lobe of the right lung. The cavity measured nearly three inches in diameter, and the foreign body could not be seen on either the screen or the plate. He was too weak to permit much anesthesia, so we proceeded on the first attempt without it. The bronchus was found to be closed by granulation tissue, but a small trickle of pus could be seen coming from between the papillæ at the bottom of the tube. After shrinking by adrenalin, they were bitten away, and, finally, with a small steel wire feeler or probe, I entered the abscess cavity and attempted to dilate the neck of the cavity, using a stout jawed forceps which was introduced closed and extracted opened. By this means, about two ounces of pus was removed by suction, and this was thought sufficient for this sitting.

During the second period I used a smaller tube and the fluoroscope to guide the forceps through what seemed to be three quarters of an inch of granulation tissue to the cavity, and, when it was entered, the fluoroscope determined the presence of the forceps in the cavity. I then tried the flexible end right angle forceps of Jackson and searched the upper half of the cavity carefully, and finally succeeded in removing what seemed to be about a third of the grass head, and again draining the cavity of pus. After this, the general symptoms improved for a while, but not for long. A third attempt was made to clean the cavity and drain the abscess, but this failed. The child went home, and an external opening was made which removed the remaining two thirds of the grass head, but the sepsis was so pronounced that the little fellow finally died.

Case II.—A screw had been inhaled four years previously, and, as usually occurs in these cases, the patient finally came under observation. An abscess about two inches in diameter, with fairly thick walls and beginning sepsis, was found. On the first examination the bronchus was found to be entirely closed, but after picking and dilating I finally managed to uncover a path which led into the abscess cavity and I guided it to come in contact with the screw. A small forceps previously made to fit this tube was now inserted, its jaws opened, and these were seen to grasp the foreign body, which I could feel as I took hold of it. We continued to watch the extraction of the tube, screw, and forceps, until the foreign body was finally delivered. This, by the way, is especially advantageous in case the forceps should slip and the body be lost, as it could still be under observation by the fluoroscope. While this did not happen in either case, it has happened before, and can be guarded against in this way.

Case III.—In the third case an upholstery tack was found in about the same position, worked about the same way, and was successfully removed.

Case IV.—A wire fence staple in the left bronchus was removed with the aid of the fluoroscope. The staple was point up when the intervening tissue was cut away to permit the removal of the mass. It was thought best to turn the staple in the trachea and bring it out by the blunt end first, so that when it was dislodged and brought into the trachea, constant watch was kept through the fluoroscope until it was turned, grasped, and delivered by its blunt end. One frequently reads of a partial delivery and subsequent loss of a foreign body, and this I have also experienced, so in this case I determined to guard against this occurrence. The staple had been *in situ* nine years and was decidedly corroded, and I was fearful lest I should break it in its removal or leave some fragments behind. The fluoroscope was helpful in determining the entire removal of the mass, and the boy made an uneventful recovery.

Case V.—A little girl swallowed lye about five years before and in due time had a stricture of the esophagus, which finally closed and necessitated a gastrostomy for feeding, but as the child grew and began to go to school she and her parents became more than anxious to reestablish feeding by the normal route. By esophagoscopy an impermeable stricture was found one and a quarter inches below the cricoid. An attempt was made to do a retrograde dilatation by an opening through the stomach, and when the bougie was in place the fluoroscope displayed about an inch separation between the esophagoscope above and the dilator below. Looking at the two points in two diameters, it was thought that they were in a straight line, and an attempt was made to dissect through the stricture. I cut through about an inch of tissue and could not reach the forceps with the knife. As the patient was not doing well, we stopped the procedure for a later session. All went well until the fifth day, when the little girl drank nearly a bottle of coca-cola, and I am not sure if that is all she had had, for her mother, who was with her, could not resist the temptation to feed her, even though everything by mouth was absolutely forbidden. A mediastinitis developed with fluid in the right pleural cavity, and the patient died. We could not secure permission for a postmortem.

---

* Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June, 1920.

Case VI.—A child, aged two years, swallowed a quarter of a dollar, which slipped into the stomach, where it lay for two weeks. The fluoroscope determined that it was probably nearer the greater curvature but toward the pylorus. A bronchoscope was passed into the stomach, and after moving the patient on the side and then on the back, we finally placed the tube over the foreign body and removed it.

Case VII.—This was a baby, in whom we found an open safety pin in the stomach. The same procedure was tried as in the previous case, but after seven minutes' search we were unable to find the pin. All was in readiness to do a gastrostomy, and Dr. Urban Maes removed the pin through the smallest of incisions, and in fifteen minutes the incision closed up and the patient was ready to return to the room. She made an uneventful recovery.

SUMMARY.

Fluoroscopic bronchoscopy is of the greatest aid in the successful removal of long retained opaque foreign bodies from the bronchi or abscess cavities, and it likewise helps as a guide to the site of abscess even when the foreign body cannot be seen. It is an aid in selected gastroscopic cases, and I am sure someone will report its successful assistance in reestablishing a pathway in an impermeable stricture of the esophagus in a more favorable case than the one which I have just reported.

634 Maison Blanche Building.

Six Cases of Foreign Bodies in the Esophagus and Bronchi*

By CHARLES J. IMPERATORI, M. D.,
New York.

I present below a detailed report of six cases which are the most interesting of all the cases seen or operated in by endoscopic procedure in my practice since the last meeting of the association.

Case I.—Collar button in the esophagus. H. F., female, fourteen months old, had been treated for various diseases including pneumonia and whooping cough over a period of nine weeks. The patient was referred to me by Dr. Lasher, of Yonkers, N. Y., who had had the child radiographed. A collar button was located in the esophagus in the region of the third dorsal vertebra. Several attempts were made to remove the collar button by indirect methods, but these failed. The child was brought to the Park Hospital. She presented a typical appearance of water hunger, starvation and complete prostration. General stimulation and feeding by rectum and a Murphy glucose drip were immediately started. The child did not seem to respond to the treatment. The temperature at the time—July 25, 1919, 5 p. m.—and after seven hours of treatment in the hospital was 102°, pulse 140 and respiration 40. It might be mentioned that there was complete aphagia.

It was decided—due to the poor condition—that an attempt of short duration would be made to remove the foreign body. Using a child's size esophageal speculum of Jackson, the collar button was located in the esophagus about one and a half inches below the cricopharyngeal constriction, firmly embedded in the tissues. That is, the head of the button was embedded in the posterior wall of the larynx and the larger part of the button was in the tissues of the esophagus, the stem of the button being at right angles to the long axis of the esophagus. The radiograph was taken before the endoscopic examination and the attempts by the indirect method had wedged the button in the position seen through the speculum. An attempt of two minutes' duration to dislodge and rotate the button failed. The little patient had practically succumbed and only by vigorous methods of resuscitation resulted in reestablishing breathing.

It was decided to wait twenty-four hours before doing anything further. In the meantime the same general treatment outlined above was carried out. Gastrotomy was suggested, but refused by the parents. The following day, July 26th, the child's condition seeming to be slightly improved, another two minute attempt was made and resulted in the extraction of the button. A Johnson-Jackson laryngoscope was used, and this being but a ten mm. tube, the child breathed better during the procedure. A hook was used to tilt the button and a Mosher alligator forceps used to extract it.

---

* Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

In the extraction, it was necessary because of the size of the button to remove the laryngoscope, forceps and foreign body together. No anesthesia was used. After removal the esophagus was examined. There was a great deal of ulceration of the tissues on the posterior surface of the laryngopharynx and considerable laceration of the esophagus posteriorly. The child survived the removal of the button about ten minutes, apparently dying from respiratory failure. Autopsy was refused.

Case II.—W. D., aged eight years, male; inspirated a nine mm. ball bearing that he had in his mouth. He was brought to Bellevue Hospital. Radiographs showed the ball located in the left lung—and when seen by me it had been impacted for thirty-six hours. There was practically no air entering the left lung. Mainly because of the mental attitude of the patient a general anesthesia was given and the ball located in the left bronchial rhamus leading to the superior lobe. Ether anesthesia was used. A seven mm. Jackson bronchoscope was used. The Hubbard hook was used to withdraw the ball into the main bronchus; that is, the flat corrugated part of the instrument was used on the ball and a sort of filing motion employed, but making no pressure on the forward stroke. As soon as the ball was in the main bronchus the Bremmings' four pronged forceps was used and the ball, forceps and brochoscope withdrawn together. The ball was two mm. larger than the outside diameter of the bronchoscope. Time of operation twenty-five minutes. The patient made an uneventful recovery and left the hospital within three days.

Case III.—A. B., female, aged three years. The patient was referred by Dr. Davis of Tarrytown, N. Y. The child had had laryngeal diphtheria and had been intubated. After six days, the child having recovered, it was decided to extubate it. Repeated attempts by the physician failed. The child was seen at Eastview Hospital, Westchester Co., at midnight, November 2, 1919. There was slight dyspnea—otherwise the child was in good condition. Direct laryngoscopy showed the head of the tube subglottic and considerable edema of the arytenoids. Using a Mosher laryngeal spatula and a Lynah straight intubation forceps, the tube was extracted without any difficulty within a few moments. No anesthetic was used. The child made an uneventful recovery.

Case IV.—A. E., male, aged fourteen months. Admitted to Bellevue Hospital November 29, 1919. A clinical diagnosis of a foreign body in the bronchus had been made from the history—the child having been playing with some grapes and candy coupled with the sudden onset of dyspnea on November 25th and which was continuous. The physical signs were that of a beginning pneumonic consolidation of the right side. Radiographs were negative for a definite, foreign body shadow. However, Dr. Hirsch, the radiographer of Bellevue Hospital, on examination of the plates, diagnosed the condition definitely as a foreign body—mainly from the flattening of the pleura on the right side. The general condition of the child was bad; temperature 101°, pulse 120, respiration 40. Dyspnea was marked, with considerable epigastric depression on inspiration.

Using a five mm. Jackson bronchoscope, a foreign body was seen in the lower part of the right main bronchus. This was easily removed, but it was necessary to remove the bronchoscope and foreign body together. The foreign body was a branched grape stem; two, one half inch branches from a main stem one quarter inch in length. A small Jackson rotation forceps was used to extract the foreign body. No anesthesia was used. Time eight minutes. The child remained in the same condition and as the dyspnea seemed to be of the respiratory type a tracheotomy was done. Laryngoscopic examination showed slight edema of the vocal cords. The child died twelve hours after the tracheotomy. No autopsy was permitted.

Case V.—E. M., female, aged twenty-eight years. This patient had made several attempts at suicide and the day she made her third attempt she was taken to the Post-Graduate Hospital, where she was seen by Dr. Douglass and who obtained the history appended below.

Because of the nature of the case she was sent to Bellevue Hospital. Eight hours later when she was admitted to Bellevue Hospital no history could be obtained from her. She was in a condition of semicoma and it was only with great difficulty that she could be aroused.

The following report was given by Dr. Douglass: The patient had been suffering for some time from melancholia. She had made three attempts to end her life; once by breathing gas, again by taking carbolic acid or iodine, I think it was iodine, and then one day she picked up one of her husband's razor blades and in the presence of the family attempted to swallow it.

This occurred on April 1, 1919, and she was seen about thirty-six hours after having swallowed the razor blade.

Fluoroscopic examination showed an opaque object about one and one half by one half inch in size lying apparently in the esophagus at the level of the third to the fifth cervical vertebræ. Using a Jackson esophageal speculum and a Mosher alligator forceps the razor blade was removed in the following manner: Passing the instrument down to the edge of the blade and steadying the razor blade with the forceps the end of the instrument was rotated around the sharp edge. The forceps engaged the blade, near the blunt edge. Then the speculum, forceps and blade were removed together. The blade was so brittle that it broke while holding against the speculum after rotating the speculum around the sharp edge. No anesthesia was used. There was no bleeding during or following the operation. Examination of the esophagus in the location where the blade was removed showed some slight traumata of the mucous membrane. The patient had been admitted to the hospital as a case of encephalitis lethargica plus the foreign body. After removal of the foreign body she was retransferred to the medical wards.

The patient died three days later and autopsy showed a perforation of the esophagus at the third dorsal vertebra. There was also considerable ulceration of this part of the esophagus. Death was due to pleurisy and mediastinitis.

Case VI.—S. B., female, aged seven and a half years. Admitted to Bellevue Hospital with a tentative diagnosis of pulmonary tuberculosis. She gave a history of having inspirated a tack seven months previously, but the child's parents were told by the attending physician that the child would cough it out if it was in the lung. Another physician was certain she had pulmonary tuberculosis, mainly from the irregular temperature.

When taken to the medical wards she was radiographed and a tack was made out to be the possible cause of her trouble and was located within the left bronchus. On April 3, 1920, without any anesthetic a seven mm. bronchoscope was passed and by manipulation and traction, using the side biting forceps of Jackson, the tack was removed. Endoscopically the tack was in the bronchial rhamus leading to the superior lobe and head down.

Suction aided materially during the operation, as did sponge pumping. The day following the removal of the tack the child's temperature went to 101° F., but this promptly subsided and within three days she left the hospital.

All of the cases seen at Bellevue Hospital were in the otolaryngological service, of which Dr. C. G. Coakley is director.

SUMMARY.

1. There was a mistaken diagnosis in both the collar button case and the case of the upholsterer's tack. Radiographs would have cleared these cases easily.

There was a mistaken diagnosis of encephalitis lethargica when the condition really was sepsis, perforation of the esophagus from the carbolic acid or iodine or some other manipulation the patient did in her attempts at suicide, empyema and esophagitis being the final picture.

2. In the case of the grape stem the diagnosis of a possible foreign body, at least one that was not opaque—from the radiograph, that is from the position of the diaphragm.

3. The usefulness of the Hubbard hook in the ball bearing case.

4. The ease with which extubation can be performed by direct laryngoscopy.

5. The seriousness of the outcome of foreign bodies of vegetable matter in infants and particularly if *in situ* for any length of time.

6. The ease with which five of these patients were operated upon without any anesthesia.

17 East Thirty-eighth Street.

Suppurative Submaxillary Adenitis

By BENJAMIN LIPSHUTZ, M. D.,
Philadelphia.

The oral cavity and mandibular and maxillary infections as sources of acute general sepsis are now well known and beyond dispute. It is only in recent years that attention has been called to the fact that infections other than acute sepsis may arise from an infectious focus in the mouth. Current literature is replete with numerous studies of the teeth as the underlying cause of focal infections. The infectious focus is not always an acute process, indeed, it is more commonly a chronic lesion and frequently symptomless.

It is not the purpose of this paper, however, to discuss the problem of focal infections, but to call attention to the common occurrence of suppurative submaxillary adenitis which have their origin in quiescent abscesses of the teeth. I have observed, within the past nine months, in the outpatient service of the Mt. Sinai Hospital of Philadelphia twenty-one well marked cases of suppurative submaxillary adenitis following quiescent abscesses of the teeth. The cases were carefully studied and such general diseases as syphilis, typhoid fever, tuberculosis, scarlet fever, measles and leucemia eliminated as possible caustive factors. Infection and suppuration of the submaxillary lymph nodes may follow an infectious focus located in the nose, paranasal sinuses, the throat, mastoid process, oral cavity and infections of the face and forehead.

Many of the infectious lesions of the mouth are of a chronic character, often not noticed by the patient and have existed for a long period without local symptoms. The chronic lesions are the ones which so frequently cause focal infections. An acute alveolar abscess is seldom neglected by patients. The chronic blind abscesses or dental granulomata existing with symptoms so mild that no attention is paid to them, are more dangerous than the violently acute conditions because of their deceptive nature. The processes in the teeth can be compared with a circumscribed osteomyelitis. Bacteria and their toxins may thus be readily carried into the bloodstream or lymphatics. The infection of the lymph nodes in these cases takes place through the lymphatic vessels draining the infected area; and similarly this is one of the modes of distribution of infection in oral focal disease. The following is a brief résumé of the lymphatics of the teeth:

Halle's experiments disclosed the fact that particles passed through the whole pulp and were found in the lymphatic nodes. Schweitzer demonstrated the presence of lymphatic vessels in the dental pulp and peridental membranes. These experiments have been confirmed by Noyes and Kaeche. The lymph vessels pass out of the mental and infraorbital foramina, run a superficial course following the facial artery and vein and terminate in the large submaxillary lymph nodes. Numerous anastomoses connect the lymph vessels of the peridental membrane, first, with the neighboring large lymph vessels passing through the bone; secondly, at the inlet of the alveolus with the deep lymphatic network of the gingival submucosa and thirdly, with the lymph vessels accompanying the larger bloodvessels entering and leaving the dental pulp. In the lower jaw they communicate with the lymph vessels which follow the bloodvessels and nerves within the mandibular canal.

The upper jaw lymph pathways enter directly into the deep cervical nodes usually of the same side, but at times cross and enter the lymph nodes of the opposite side. The lymph pathways from the teeth of the upper jaw pass, at least those from the infraorbital foramina or small secondary openings, to the submaxillary nodes. In the lower jaw the lymph vessels empty into the submaxillary lymph nodes or deep cervical nodes.

The lymph nodes which receive products from the teeth and gums are, first, the suprahyoid glands, which lie between the bellies of the digastric muscle and drain the anterior part of the lower gums and teeth and pass the lymph on to the submaxillary group which are numerous and small. The latter lie in the digastric triangle along the inferior border and ramus of the mandible. Secondly, the superficial cervical lymph nodes which lie along the external jugular vein receive some lymph from the posterior part of the gum. The deep cervical lymph nodes lying along the internal jugular vein indirectly through the submaxillary group receive lymph from structures of the mouth.

The lymph from the upper jaw is received partly by the deep facial glands. They are situated at the side of the pharynx behind the buccinator muscles. Cases of infection of these glands may be mistaken for quinsy, as they are close to and behind the tonsil. The facial glands are further divided according to their location into three groups. First, the inferior maxillary group situated on the external surface of the rami of the mandible, in front of the masseter muscle, between the facial artery and vein; second, a middle group situated upon the buccinator, one part of which is found not far from the angle of the mouth, between the facial artery and vein; the other near the point where Stenson's duct perforates the buccinator muscle. A third group (malar) is located on the zygomatic process (malar process) of the maxilla or upon the malar bone. The superior and middle groups receive lymphatics from the nose, upper lip, the temple, the eyelids and the cheek, the superior alveolus with its teeth and the tonsils, the pillars of the fauces and the parotid gland. The maxillary glands receive lymphatics from all these locations and also from the lower lip. The facial lymph nodes may be infected from dental caries, more particularly the upper molars. In rare cases the submental lymph nodes are affected from the lower incisors. Clinically, suppuration in the lower lymph nodes is far more common than in these upper ones.

The reaction of the glands varies according to the virulence and character of the invading bacteria. There were twenty-one cases observed, of which eight occurred in adults. The infected nodes were deep seated, lying along the side of the lower jaw. The local symptoms were those of inflammation and a sensation of tension suggesting a deep suppuration. In the cases occurring in adults the patients complained of stiffness of the jaw and painful deglutition, but the condition was nonfebrile. Redness of the overlying skin was absent in four of the latter cases. The cases observed in children were all accompanied by a marked febrile reaction in addition to the local symptoms. If no suppuration occurs, the glands are not fixed and the overlying skin is not changed. When the adenitis is acute there is more or less pain on movement of the jaw. Fluctuation of the facial glands when present is detected between the two fingers, the one placed within the mouth, the other outside. Suppuration of the facial glands when not interfered with usually evacuates itself through the skin rather than through the mouth. It is well to remember that this type of adenitis is slow and insidious in its development, and in adults the eventuation of suppuration may be accompanied by mild local symptoms only.

A radiographic study of the teeth was carried out in all these cases and revealed a typical apical granuloma or a pus soaked, partially absorbed tooth apex. X ray examination is essential for the successful treatment of this type of adenitis. Mere opening of the abscess without treatment of the teeth delays and prolongs recovery. We have made it a routine practice in the Mt. Sinai Hospital to have radiographs of the teeth taken in all cases of submaxillary, cervical or facial adenitis and if the x ray examination discloses evidence of disease of the teeth they are referred to our dental clinic for the necessary dental treatment.

The entrance of the tubercle bacillus is probably more common than we think. Cantani has reported fifty clinical cases of tuberculous infection of these lymph nodes through the teeth. The history was analogous to the chronic form.

The submaxillary abscesses were opened through a transverse incision over the digastric triangle by Hilton's method and gauze saturated with five per cent. dichloramine-T introduced as drainage. The patients were immediately referred to the dental surgeon for the necessary treatment of the teeth. Cases where the disease has not progressed to the point of suppuration usually subside under proper dental care. The drainage must be efficient and thorough. Continued suppuration results in a destructive osteomyelitis and pathological fracture of the mandible. The type of osteomyelitis occurring in these patients is usually accompanied by mild symptoms only.

CONCLUSIONS.

A radiographic study of the teeth should be carried out in all cases of cervical, facial and submaxillary adenitis. The external appearance of the teeth gives unreliable evidence of the existing pathological condition. The cooperation of the dental surgeon is indicated for the successful and expeditious treatment of submaxillary, cervical and facial abscesses which have their origin in dental and peridental infections.

1007 Spruce Street.

The Source of Focal Infection Iritis

By CLAUDE G. CRANE, M. D.,
Brooklyn, N. Y.

Infection in the nasal sinuses may invade the orbital contents in two ways. The direct invasion may be due to the actual breaking down of the bony and soft tissue walls, resulting in orbital infection by contact. The direct invasion, on the other hand, may be without destruction of tissue and due to the passage of the toxins or even the bacteria themselves through the diploic veins and the lymphatic channels which are so abundant in this region. The indirect invasion is through the blood stream and presents the same pathological entity that we have in other well recognized conditions.

Toxic arthritis secondary to focal infection has long been accepted as an authenticated clinical entity. The same may be said of a considerable group of well recognized pathological sequences. Toxic iritis did not find its proper place in the grouping until some time after focal infections and their sequelæ were firmly established as scientifically proved conditions.

Case I.—On November 9, 1913, Miss B., aged forty years, was referred to me by Dr. J., an ophthalmologist, and Dr. R., an internist. The patient was first seen by Dr. J. during an attack of acute iritis, which did not respond to treatment. The following history was elicited:

The patient had had rheumatic fever when she was ten years old. She had enjoyed excellent health until two years ago, at which time her tonsils were operated upon by a specialist and the nose operated upon subsequently on two occasions by the same specialist. The present illness began with an acute iritis involving both eyes. Dr. J. reported as follows: He first saw Miss B. on January 13, 1913, at which time she was having her first attack of iritis. When first seen the right eye only was involved, but subsequently both eyes were affected. The iritis was of a severe plastic type, unusually obstinate, and showing a marked tendency to recur at frequent intervals. The Wassermann test was negative. Knowing that the patient had had her tonsils operated upon, and also had had operative work done inside the nose, he referred her to an internist for further investigation.

An examination of the nose showed the septum to be markedly thickened and deformed, causing nasal obstruction on both sides. A small part of the right inferior turbinate and the right middle turbinate had been removed. There was a mucopurulent discharge under the middle turbinate on both sides. Postnasal examination revealed a similar discharge from both sides. The nasopharynx contained considerable adenoid tissue, which was much inflamed. The mucous membrane of the nasopharynx and the oropharynx presented the picture of a chronically infected membrane. There was a large amount of infected tonsil tissue on both sides. A small abscess in the right tonsil was incised and pus evacuated. Cultures taken from the right tonsil showed streptococcus and the micrococcus catarrhalis, while the left tonsil showed staphylococcus aureus and the micrococcus catarrhalis. Cultures from the nose showed only staphylococcus albus. Both ear drums were thickened and some dullness in hearing was present.

I reported that operation should be performed at once to eliminate the infection in the sinuses and tonsils. The patient was in a highly nervous condition, and her previous operative experiences had been very distressing without bringing her relief. As the patient absolutely refused to consider any operative work whatever, conservative measures were instituted in the hope that consent to an operation would eventually be obtained. Treatment consisted in frequent washing out of the nasal cavities, followed by the instillation of argyrol, and the opening of pockets of pus in the tonsils and injecting argyrol. I used autogenous vaccines, although previous experience had shown me that little or no help was to be expected from their use until the various foci had had proper surgical treatment. The iritis was under the constant care of the ophthalmologist. For a period of ten months previous to coming under my care this patient had had recurring attacks of iritis and was totally incapacitated.

On November 19th I noticed that the mucous membrane posterior to the upper incisors was badly inflamed. The teeth presented sufficient evidence to warrant my urging the patient to have her dentist begin proper treatment at once. On November 22d the iritis again showed acute symptoms. On December 5th cultures showed streptococci and staphylococcus aureus. I treated this patient frequently and as thoroughly as conservative measures permitted, while urging operative treatment. The iritis following this period seemed to be improving. On March 7, 1914, there was another attack of iritis. The frontal sinuses and the antra were found to be free from infection.

On April 7th a submucous resection of the septum was done. Following this, the nasal pathology greatly improved and the eyes seemed to be much better. The patient's experience with the results following the submucous operation were such that she consented to a tonsil and adenoid operation on July 1, 1914. On October 14, 1914, it was noticed that there was still considerable discharge from the posterior group of ethmoidal cells and from the sphenoids. On November 5th she had another attack of iritis. At this time I again urged her to have her dentist treat the infected teeth in an efficient manner. In January, 1915, another rather severe attack of iritis occurred. With these later attacks it was noted that both middle turbinates became swollen and that the postnasal discharge increased. On February 6th the iritis was subsiding; on March 3d another attack occurred. I seized this opportunity to urge again radical operative treatment of the sinuses. This was done under local anesthesia. From March 3d to November

26th there were no attacks of iritis, which was the longest period she had been free since the first attack in January, 1913. The attack on November 26th was a mild affair and soon cleared up. Feeling convinced that her dentist was too old fashioned to be useful, I succeeded in placing her in the care of a competent dentist. I cultured the teeth at this time and found streptococci. Autogenous vaccine was used while the dentist was treating the infected teeth. The patient has been entirely free of attacks of iritis up to the present time, and the nose and throat have not required any attention whatever. It is now five years since the last attack of iritis, and the patient has been attending to her duties as teacher. The ophthalmologist reported as late as October, 1919, that there had been no further attacks of iritis, and that the result was most gratifying.

My object in reporting this case is to point out a number of the ills which it so well illustrates. If this patient had been seen at the time of the first attack of iritis, and the surgical elimination of the foci of infection accomplished at once, I have no hesitancy in stating that the iritis would have been placed under immediate control and further attacks prevented. After a period of ten months, when I first saw the patient, there was a much more difficult problem to deal with. If I had been permitted to do at one sitting under general anesthesia the surgical work which I eventually accomplished piecemeal over a long period of time, we would have saved the patient months of suffering and the eyes would have benefited proportionately.

Case II.—Mr. K., aged fifty-nine, was referred to me by Dr. J., an ophthalmologist, on October 2, 1917. The following history was elicited: The patient had always enjoyed good health up to six years ago, since which time he had had frequent attacks of iritis. The early attacks involved both eyes. For the past three years the attacks had involved one eye at a time, although both eyes had suffered about the same. He never had had rheumatism until six years ago, at which time the attacks of iritis first made their appearance. The rheumatism and the iritis had been present during this period. The right knee had been particularly troublesome, although practically all of his joints had been affected. The neck had also been rheumatic. He never had had tonsillitis nor been susceptible to colds in the head. He had had what he called a moderate catarrh with dropping into the throat. One year ago he went to Mt. Clemens, Mich., for treatment. This was followed by a slight improvement for a short time. Six months ago he had an x ray of his teeth, as a result of which two impacted teeth were extracted. No benefit was apparent following the extraction of the teeth, as the attacks of iritis had been just as frequent and of equal severity. The rheumatism had also continued without relief. The last three attacks of iritis had involved the left eye only. The present attack, however, involved both eyes and began two weeks ago. It had been evident to the patient that the treatment he had had up to the present time had not influenced either the iritis or the rheumatism.

An examination of the nose showed the septum to be deviated to the left with a sharp spur posteriorly, imbedded in the inferior turbinate. There was complete obstruction of the left middle meatus and gross evidence of sinus infection on this side. The right side showed complete obstruction of the middle meatus, and polypi present. Sinus infection of this side was plainly present. The postnasal examination revealed posterior discharge from both sides, and the mucous membrane of the nasopharynx and pharynx was badly inflamed. The tonsils were atrophied in appearance and presented no gross appearance of infection.

I advised surgical elimination of the sinus infection. On October 3d a submucous resection of the septum was done. Following this procedure the usual antiseptic treatment was instituted. The advisability of completing the operative work as soon as possible was pointed out, but the patient was averse to haste and I was compelled to complete the work at intervals. On November 9th a mild attack of iritis occurred. A culture was taken of the sinus discharge at this time and an autogenous vaccine was used as part of the treatment. On November 15th, January 16th, March 4th and March 23d there were mild attacks of iritis which the patient said disturbed him very little. Each attack began clearing up in from twelve to forty-eight hours. The rheumatism manifested itself less and less. An acute involvement of the left shoulder joint followed the opening of the ethmoidal cells and the sphenoids of the left side. This subsided in a few days.

Following the complete removal of the anterior and posterior ethmoidal cells of both sides and the opening of both sphenoidal sinuses, the patient was treated locally until the sinus infection was entirely cleared up. The patient was last seen on July 12, 1918, for observation. At this time the nasal condition was entirely satisfactory, and required no further attention. The patient stated that he had not had any evidence of rheumatism since May 15th, and the last attack of iritis was on March 23, 1918. The report of the ophthalmologist stating that there was an entire subsidence of the iritis and function was satisfactory. The patient volunteered the information that he believed he was cured, as he felt perfectly well.

Of this case it may be said that the iritis and rheumatism, from which the patient had suffered for six years, could have been prevented had the surgical elimination of the foci been done at the first manifestation of disease. In these late cases we have much to contend with. The original foci must be eradicated, of course, but the damage already done to the parts affected cannot be repaired. One cannot be too cautious in promising complete restoration of function. On the other hand, I have been agreeably surprised at the actual restoration of function which has resulted even in the late cases. This applies to the entire group of pathological sequences to which the cases under discussion belong.

In Case I we had three possible sources of infection: the tonsils, the sinuses, and the teeth. The sinus infection could have caused the iritis by direct invasion through the diploic veins and lymphatic channels, or by indirect invasion through the blood stream. The tonsils and teeth, of course, could only have been a source by way of the blood stream. With such a multiple source of infection present it is necessary to eliminate them all. In Case I it was noticed that there were no attacks of iritis following the radical surgical procedure on the sinuses. The dental work was not begun until some time after the last attack of iritis, and was not completed until seven months after the last attack. While I believe it was imperative to eliminate all the foci, as we did in this case, I am convinced that the sinus infection was the dominant source.

In Case II we noted that there was no change in the patient's condition following the extraction of the teeth. The iritis and rheumatism continued as before. The complete and permanent subsidence of the iritis and rheumatism following the eradication of the foci in the sinuses proves beyond any doubt that the sinus infection was the sole source of the rheumatism and iritis. Here again the invasion may have been through the diploic veins and the lymphatic channels or by way of the blood stream. The presence of the rheumatism in this case, which went hand in hand with the iritis in its onset, course and subsidence, is, to my mind, conclusive evidence that in this particular case the iritis was caused by a blood stream invasion.

121 ST. JAMES PLACE.

General Versus Local Anesthesia in Operations on the Nose and Throat

By W. R. WATSON, M. D.,
Philadelphia.

There has been some discussion of late over the question of whether certain operations on the nose and throat should be done in the office under local anesthesia, more particularly with respect to submucous resection of the nasal septum and tonsillectomy. My views on the matter, while I am not inclined to be dogmatic or contentious over the subject, are somewhat fixed and prejudiced in favor of the procedure. Every nose and throat surgeon has his own peculiar ideas, however, not only as to the propriety of attempting these operations in his office under local anesthesia, but also as to the technic in accomplishing the anesthesia when he does. These points I shall endeavor to bring out as I proceed.

Submucous resection of the nasal septum is usually done in the office by most nose and throat surgeons, but there are a few operators who prefer to do this operation under ether in the hospital. They do practically all their submucous resections in this way, and, therefore, one must conclude that it is not a case of expediency with them. They really prefer it. To me this seems a mystery, considering the difficulty in technic as compared with the simplicity of the procedure when done under local anesthesia. This, of course, is only another case of difference of opinion. Naturally, there are some isolated cases in which we must all operate under general anesthesia. The patient insists upon it and will not submit to the operation at all unless he can have ether, and if you do not comply with his demands he leaves your office and finds someone who will.

I have no doubt that we all have witnessed a submucous resection under general anesthesia, but for those who might have forgotten the picture I take the liberty of refreshing their memories. The patient is brought in from the anesthetizing room, and with him comes the anesthetist, an assistant, a surgically clean nurse, and another nurse. Including the operator, you will note that it takes five people to do this simple operation, and all of them seem to be necessary. The patient's posterior nares are packed, or perhaps instead a suction pump is used to keep the blood from running down the throat; it depends on the operator. A few pads saturated with a solution of adrenalin are inserted into the nostrils, removed again, and then the operation proceeds. From the first incision the blood commences to flow and the assistant begins his almost hopeless task of keeping the surgical field clear so that the operator may see what he is doing. The clean nurse is more than busy passing strips of gauze to the assistant, who, with dressing forceps, packs them down in the nostril for a fleeting moment and withdraws them again, whereupon the blood wells up again. But not before the operator has made another masterly attack upon his septum, if only for a moment. And this fight against the rising tide of hemorrhage lasts throughout the whole operation, provided it is not prolonged. For of course you all know the physiological effect of ether. It at first greatly stimulates the heart, and later it depresses, and, notwithstanding the adrenalin applied in the nose before the operation commences, the nose bleeds just as I have stated, which creates a condition, I feel sure you will agree, that is not conducive to good surgery. Moreover, when the operation is finished the patient has the added discomfort of recovering from the ether, which is not an inconsiderable item. I fail to see, therefore, why one should prefer to operate in such a bloody mess when he has at his command a perfectly clean, painless, and safe procedure, by which I mean the operation under local anesthesia. In this case the patient walks into your office unaccompanied by any assistant. You use your favorite method of anesthetizing the septum; do a perfectly clean operation in open view; pack the nose as you are in the habit of doing; bid your patient good day, and he leaves feeling pretty cheerful. Furthermore, he is able to come back to your office the next morning for the removal of the packing, and he has been saved all the expense incident to a stay in the hospital.

There are several ways of anesthetizing the septum. Some surgeons use the crystals of cocaine, ground up into a fine powder. Unless it is treated in this way the sharp crystals have a tendency to cut into the mucous membrane and make it bleed. An applicator is first dipped into a one in one thousand solution of adrenalin, and then into the powdered cocaine. With this the mucous covering of the septum in both nostrils is massaged until three to four grains of the drug have been used. Complete anesthesia should be obtained with this amount. In certain individuals this method not infrequently causes a mild toxemia, though I have often thought that what I have taken for toxemia in most cases was nothing more than nervousness. At any rate, it lasts but a short time, and if the patient is allowed to lie down for a few moments it passes away and the operator may proceed with his work without further interruption.

Another group of operators use a ten per cent. solution of cocaine, into which has been introduced a sufficient quantity of adrenalin, one in one thousand. They place against the septum separate pads of absorbent cotton which have been saturated with the solution, thus covering the septum on both sides with these pads. These pads are allowed to stay for about ten minutes, or until it is thought that anesthesia has been accomplished, which takes from ten to fifteen minutes. This is a favorite method of some operators. They assert that it does not lacerate the mucous membranes as the crystals do, nor do the patients seem to present the toxic manifestations I have already spoken of when using the latter. But I maintain that the anesthesia is nothing like so perfect as that procured with the crystals. These patients often complain of pain, whereas those anesthetized with the crystals seldom if ever do.

Still another group favor the injection of weak solutions of novocaine or apothesine beneath the perichondrium, or between the latter and the cartilaginous and bony septum. They assert that this method serves two purposes; it not only anesthetizes the septum but also elevates the perichondrium from the septum in such fashion that only a few touches here and there with a sharp Freer elevator is necessary before bone removal is commenced. This method would seem ideal if it accomplished all its advocates claimed for it. I must confess that my experience in anesthetizing the septum in this way is practically nil, or at least not large enough to allow me to speak with any degree of authority respecting it. I once attempted two operations with this method, and, if my memory serves me right, I was finally compelled to apply cocaine to finish the operations in each case, after which I naturally abandoned it. Perhaps, however, my technic was at fault.

I believe that among the three common methods of anesthetizing the nasal septum, of which I have spoken, the use of cocaine crystals is the most popular among nose and throat surgeons. I have no statistics to offer upon which to base this statement, but I have gathered this idea from personal observation, not only here in Philadelphia but elsewhere.

Now about the much mooted question of tonsillectomy in the office. I do not, by any means, wish to give the impression that I prefer this method over the ether and hospital operation. As a matter of fact, I am compelled to confess, in the interest of truth, that while I feel altogether safe when doing the operation in a well equipped hospital, I am not without qualms of apprehension when I throw the snare over a tonsil in my office. While I am nearly convinced that any fear I might have felt in the past on account of the hemorrhage bugaboo was groundless, I never fail to approach the task with respectful steps, which sounds, of course, to a critical mind, altogether paradoxical. But what I wish to express in plain words is that when the necessity requires it, and there are many such occasions, I consider it entirely appropriate to do the operation in one's office. In ninety-nine cases out of a hundred your sigh of relief as the patient walks out of the office is justified. There will be no hemorrhage. The hundredth one may bleed, however, and it is this small percentage which has raised the contention against the operation with local anesthesia. Usually, however, it is not a massive hemorrhage, and if the bleeding is immediate and not postoperative one can nearly always stop it in the office by means of some simple styptic. Most of the time the mere application of hydrogen peroxide will stop it instantly. If the patient is sufficiently tractable a suture may be thrown around the bleeding point. At any rate he can always be taken to the hospital and the bleeding controlled under ether.

Not long ago I heard a prominent surgeon pronounce the tonsil operation as a major operation. If this is so, and I have never answered that question in my own mind, it seems palpable that the operation should never be attempted in one's office chair. But is it a major operation? And is it a fact that nearly every nose and throat surgeon, all of whom have been doing these operations every day with practically no casualties, are guilty of stepping beyond their sphere of practice? I contend that they have not. As a matter of fact, in my opinion the gravity of the tonsil operation is no greater than in any other nose and throat operation from which we might expect hemorrhage.

Another argument I have heard advanced against the local anesthesia operation is that the patients would eventually come to consider the operation so trivial that they would protest against the fee charged. Such ideas are so mercenary that it would almost seem as if some chiropractic had uttered them. But naturally, when a patient walks into your office and a few minutes later walks out without his tonsils, it seems to him a simple procedure and not worth anywhere near the hundred dollars you charge him. The unthinking ones, in fact, call you a highway robber. "Why," they will say, "my neighbor had his taken out in the hospital, where they gave him ether, and they had assistants and nurses, and they kept him in the hospital for two days, and still the doctor only charged him as much as this highbinder charged me." It seems like boasting to tell that man that it requires a great deal more skill to do the operation under local anesthesia; it does, providing you succeed in doing it painlessly. And this brings me to the technic of accomplishing local anesthesia of the tonsil.

And here, as in the anesthetizing of the septum, every surgeon has his own favorite method. Some use cocaine, some novocaine or apothesine, and some simply normal salt solution. The cocaine is used in a one fifth of one per cent. solution, or even weaker, into which has been introduced a few drops of adrenalin, one in one thousand. The advocates of the use of this solution try to limit the amount injected to no more than three drams. So the patient receives, injected into his tissues, thirty-six hundredths of a grain of cocaine. But with cocaine one operates immediately after the injection has been accomplished, and doubtless a great deal of the solution flows out of the wound. At any rate, those who are in the habit of using this solution assert that they have no more toxic effects than those who use other drugs. It has the advantage, already mentioned, that one loses no time and can operate immediately, but it has the disadvantage of necessitating great care that enough and no more of the solution should be used. Unfortunately there have been mistakes in making up the solution, a ten per cent. solution being used instead of the weaker.

Those who use novocaine or procaine have it made up into a one per cent. solution. I have no experience with apothesine at all. But novocaine is used by a great many nose and throat surgeons, and the majority of them seem to be indifferent as to the quantity used, drawing it up into their syringes without measuring it, and injecting it in sufficient quantity until they consider the parts anesthetized. This, of course, is a reprehensible practice, but exemplifies fairly well their ideas as to the nontoxicity of the drug. As a matter of fact I have yet to see the first indication of any toxic result from the use of novocaine. The manufacturers assert that it is only one fifth as toxic as cocaine. When it is considered that it is used in solution five times as strong as cocaine, and in larger quantities, I think their assertions are very modest. Procaine, the American made novocaine, is the drug most used in America. The advantage in the use of novocaine or procaine is of course in its weak toxic properties, but in order to obtain a perfect anesthesia one must wait for five or six minutes after the injection is made, which is its only disadvantage.

The use of normal salt solution to anesthetize the tonsil for operation I mention only to condemn it. As a matter of fact I think the practice is barbarous. The patients I have seen operated upon with this socalled anesthetic could not have yelled louder if no anesthetic had been used. Still I have seen fairly good anesthesia obtained with normal salt solution when injected into the skin. This, however, is because the skin is denser and offers more resistance, thereby causing a pressure anesthesia. But the tonsil ordinarily lies so loose in its capsule that this does not obtain, and therefore anesthesia does not occur, or if it does it is so mild in quality that pain is not eliminated.

The technic in injecting the tonsil for perfect anesthesia also differs among nose and throat surgeons, though without exception I think all of them are agreed upon one thing, and that is, the necessity of depositing the drug as nearly as possible around back of the tonsil and within the capsule; only their manner of accomplishing this is different. For example, one man will use a curved needle and another will use nothing but a straight one; one likes a small syringe and another a large one; one man will push the needle through the anterior column to reach the capsule behind the tonsil, and another will go directly through the tonsil. Personally, I favor the following procedure: With a straight needle the anterior pillar is moved gently aside and the needle inserted through the plica tonsillaris in a direction in line with the angle of the lower jaw. The handle of the syringe is now brought to the front and the needle pushed further in until the capsule back of the tonsil is reached, whereupon the injection is made at that point. Three insertions are made in each tonsil: one in the middle, one in the upper pole, and one in the lower pole. I have no very important reason for following this method, except that I think one may have more assurance that he can more effectually confine his solution to the capsule, and also because of the reluctance of wounding the anterior column, from which I have seen an annoying hemorrhage occur from a needle prick.

J. Coleman, in the New York Medical Journal, July 5, 1919, gives the following views respecting tonsillectomy with local anesthesia:

"As between local anesthesia and general anesthesia for the operation of tonsillectomy in an adult, in the light of our present knowledge of local anesthetics and local anesthesia, it is difficult to find justification for the use of general anesthesia and the subjection of the patient to its concomitant inconveniences and possible dangers."

The editor of the nose and throat articles in the current year book, George E. Shambaugh, professor of otology at the Rush Medical College, Chicago, in commenting on this article of Coleman's, says: "General anesthesia for tonsil operations is not recommended in adults. The danger is much greater and the discomfort is greater than when using local anesthesia." Shambaugh also says:

"1. Hemorrhage is much less under local anesthesia and what bleeding occurs is more readily controlled with the patient awake.

"2. Mental shock under local anesthesia is quite negligible, except in unusually nervous patients. For such cases give general anesthesia.

"3. Surgical shock is much less under local anesthesia when properly administered.

"4. Cleaner operation is possible under local anesthesia than with the patient asleep.

"5. An adenoid operation is rarely required when the local anesthetic is employed, i. e., in adults.

"6. Trauma is much greater when using general anesthesia.

"7. There is no difference between the methods.

"8. We believe there is no doubt that the local anesthesia is much the safer method."

1805 Pine Street.

An Aid to Diagnosis of Suspected Foreign Body in Esophagus*

By ELLEN J. PATTERSON, M.D., F.A.C.S.,
Pittsburgh, Pa.

Under the heading of suspected foreign body in the esophagus, I would classify all those cases without a definite history of a foreign body having been in the mouth, but where the patient thinks or imagines that he or she has swallowed a foreign body during the ingestion of food. In these cases symptoms usually follow the ingestion of stew, soup, or mashed vegetables, and are initiated by a distinct feeling of a scratch low down in the throat by a sharp foreign body during deglutition. Frequently the patient makes vain attempts to regurgitate the foreign body by introduction of the finger, or to push it down by eating dry food, until the patient becomes overwrought or even hysterical in the effort. In this state of mind the patient seeks medical advice, unable to swallow solid food either from pain or fear of pain. Many of these patients are neurotic individuals, and it is difficult to differentiate symptoms due to hysteria from symptoms due to foreign body, especially in a patient who has knowledge of the history of a foreign body case. The symptoms complained of are inability to swallow solid food, and pain at the level of the larynx or behind the manubrium. If the foreign body happens to be a fragment of bone or a foreign body dense to the röntgen ray, the problem is the usual one of esophagoscopy for removal. However, with negative findings by the röntgen ray, we have one of two problems: either a foreign body in the esophagus not opaque to the ray, or an abrasion of the esophageal mucosa caused by a sharp foreign body which has passed into the stomach, the esophagitis giving rise to symptoms simulating foreign body in the esophagus.

If we do an esophagoscopy in such a case we may find an epiglottiditis, a foreign body or trauma with more or less adjacent acute esophagitis. The mirror may show epiglottiditis or laryngopharyngitis; the fauces may show the results of the digital efforts of the patient, or all local examination including the endoscopic may be negative. In the face of negative röntgenographic findings it is essential to have some aid in locating obstruction in the esophagus in these cases.

If a patient is given a thick barium meal during the fluoroscopy for diagnostic purposes, the esophageal walls become so pasted with barium that finding a foreign body or diagnosis of esophagitis becomes more difficult, and it is necessary to postpone esophagoscopy for a number of hours to allow the barium to escape.

In my work with Dr. George C. Johnston, Dr. George W. Grier, and Dr. W. R. Ray, we have decided upon the following method by which we now determine whether or not esophagoscopy is indicated in indefinite foreign body cases where radiographic findings are negative and symptoms are indefinite. The patient is given a large capsule filled with barium, and its course down the esophagus watched with the fluoroscope under the eye of the fluoroscopist experienced in esophageal work and familiar with the normal hesitation in movements of the esophagus. The small amount of barium spilled out of the capsule, if it lodges above any obstruction, acts as an aid rather than a hindrance in locating the level of obstruction during esophagoscopy. This method will reduce the number of cases in which we must act on the rule "In case of doubt do an esophagoscopy."

Case I.—Mrs. A. W., aged thirty-five years, complained of severe pain in the throat and inability to swallow solid food for five days after having eaten mashed potatoes. She used her finger vigorously to dislodge what she thought must be a chicken bone in her throat, to no avail. The report of the röntgenologist, Dr. G. W. Grier, showed no opaque foreign body in the esophagus, but the bismuth capsule lodged opposite the first dorsal vertebra. Esophagoscopy revealed no foreign body, but an intense ulcerative esophagitis with a very foul odor. Symptoms disappeared with the clearing up of the esophagitis.

Case II.—R. O., male, aged twenty-six years, complained of inability to swallow solid food and sudden severe pain extending from behind the middle of the manubrium down to the right arm, for five days following the eating of vegetable soup. The pain was continuous night and day and so severe he could not sleep. Röntgenographic examination by Dr. G. W. Grier showed no opaque foreign body in the esophagus, but the bismuth capsule delayed opposite the fifth dorsal vertebra and would not pass even after the patient drank a glass of water. Esophagoscopy revealed no foreign body, but an abrasion of the esophageal mucosa, and the patient had instant relief from pain and dysphagia following the esophagoscopy.

Case III.—Mrs. S. M., thirty years of age, complained of swallowing a piece of cotton from around a tooth, while eating mashed potatoes. For two days she could swallow solid food, after which she could swallow liquids with difficulty, and for twenty-four hours previous to consulting me she said she had swallowed nothing. The report from Dr. G. W. Grier, the röntgenologist, is as follows: "We gave this patient a bismuth capsule which went down very rapidly and without the least hesitation into the stomach. In spite of this fact, she insisted that it was sticking in her throat, and showed us the point where it was sticking. We then gave her a few swallows of the barium solution, which went down without any trouble whatever, and outlined the esophagus, which is entirely normal in contour. There is no evidence of any foreign body or lesion in the esophagus of this patient."

In this case no esophagoscopy was indicated, and the patient recovered without further trouble.

1018 Westinghouse Building.

---

* Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

Gillies New Method in Giving Support to the Depressed Nasal Bridge and Columella

By J. EASTMAN SHEEHAN, M. D.,
New York.

The object of this paper is to place before the surgical profession a new method of giving support to the nasal bridge for the relief of distressing deformities of the nose. The method as practised and evolved by Gillies is entirely new. Gillies performed his first operation during the past summer in London, and, as far as I know, I performed the first operation in America during the early autumn. The question naturally arises, What are the best supporting substances to be used in giving permanent support?

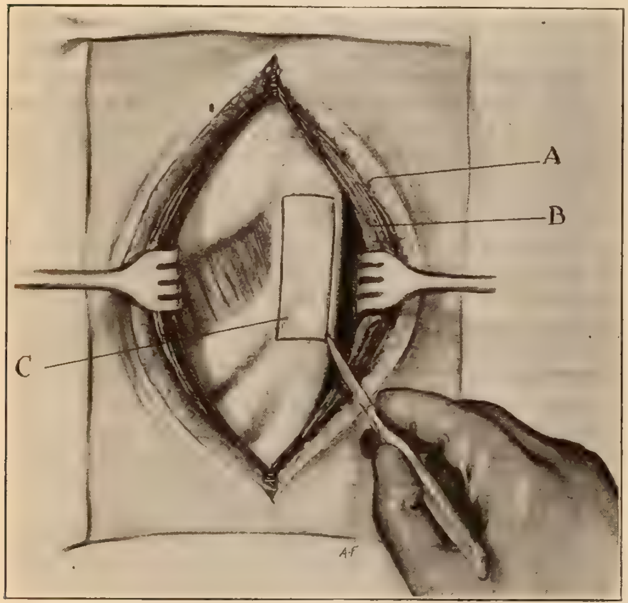


Fig. 1.—A, skin and fat; B, rectus muscle; C, outline of cartilage to be removed with perichondrium intact.

The greatest difficulty which the plastic surgeon encounters is the question of contour and substructure. If it were possible to imbed foreign bodies in the nose and face which would not give surgical trouble, the problem would be a simple one. Surgeons who have worked in this field of endeavor have taxed their resources to the utmost to avoid the great difficulty that surrounds the provision of natural substitutes for the bony substructure. There has been a tremendous temptation for them to look to all sorts of foreign bodies on which to reconstruct the face and nose. So great was the temptation that during the early part of the war foreign bodies were much used, particularly by the French, because hundreds, perhaps thousands, of pieces of metal had been imbedded without causing apparent trouble. We know that before the war the implantations of foreign bodies, particularly celluloid, silver filigree, and the injecting of paraffin, was widely used, but the great success will surely come to him who by proper surgical means uses transplants of a normal or nearly normal tissue. This whole problem has been solved by the wonderful work of Gillies in the use of chondral cartilage.

Bone with or without its periosteum is to be discarded, as many times it is slowly absorbed. It is quite difficult to shape and whittle to the desired pattern, thereby causing unnecessary handling of the graft, which lessens its vitality, may cause infection, and for this reason should be excluded as a means of support.

This holds good whether the bony rib, ilium, tibia or turbinates are used. It is the opinion of Gillies, based upon his extensive experience in dealing with these cases, that by using such grafts they either absorb, leaving fibrous tissue which may act somewhat as a support, necrose, or exfoliate. The uses of bony grafts are narrowed down by him to the replacement of mandibular or malar losses. Septal cartilage, consisting as it does principally of yellow elastic tissue, meets an early death as a rule. It gives a weak support, readily absorbs and has no power to combat infection. As it absorbs it is replaced by fibrous tissue which may act somewhat as a weak support.

Celluloid plates, metallic plates, injections of liquid celluloid, pieces of wax, cannot be too forcibly condemned. They act as an irritant to the tissue, generally sooner or later giving trouble by abscess formation, gangrene, atrophy of skin and finally expulsion. Grafts if they take, particularly that of cartilage, continue satisfactory.

Chondral cartilage has no bloodvessels and is nourished by lymph absorption (Smith). It probably grows when the perichondrium is intact. It combats infection as stated by Gillies. This has been admirably proved in the case of Miss D., who had an extensive infection with the staphylococcus albus, starting three days after the insertion of the

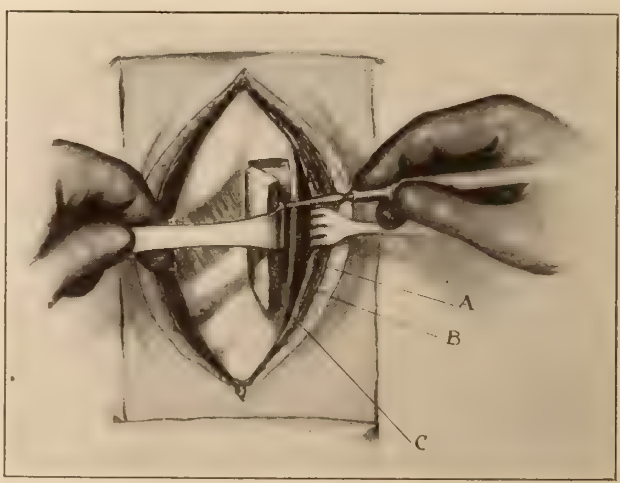


Fig. 2.—A, skin and fat; B, rectus muscle; C, block of cartilage about to be removed with perichondrium intact.

graft. By appropriate means the infection subsided within six weeks without materially damaging the graft. It can be easily handled and shaped to any desired pattern. There is one disadvantage in leaving the perichondrium intact, the graft has a tendency to bend or curl up, leaving it occupying the concavity. In the repair of tissues where a curve is required, as in the eyelids, mandible and alæ nasæ, it is well to leave the perichondrium.

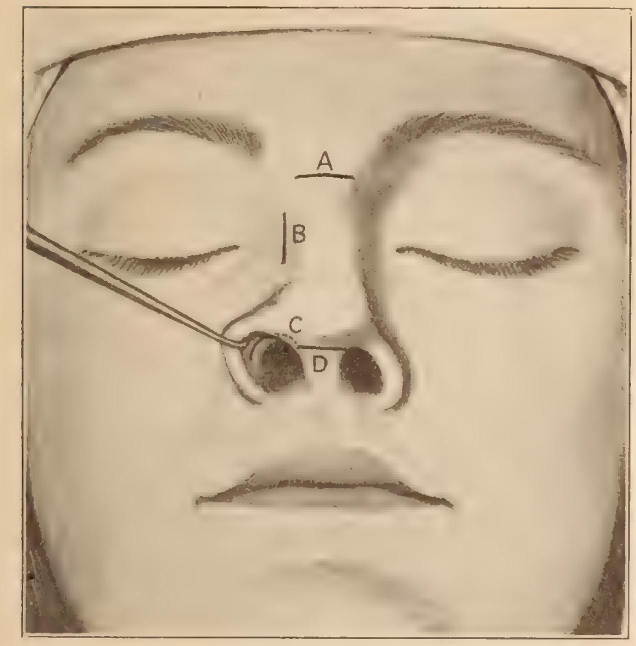


Fig. 3.—Incisions previously practiced; A, infraglabella incision; B, inner canthus incision; C, ala incision; D, horizontal tip end incision.

The experimental work of Davis and the work of Keith, Murray and Gillies have shown that there is a permanence in the cartilage graft. Only in homologous grafts has the cartilage been replaced by fibrous tissue. Autologous grafts never meet this fate, if the graft takes successfully.

METHOD OF REMOVAL OF CARTILAGE FROM THE CHEST WALL.

The method of obtaining the cartilage as suggested and practiced by Major H. D. Gillies is as follows:

The costal synchondroses are approached by a vertical incision fifteen centimetres long over the cartilages of the seventh, eighth, and ninth ribs, having its middle opposite the junction of the seventh and eighth ribs and extending through the rectus muscle, which is widely retracted. This area is chosen because here they expand into a wide plaque, and cartilage of any size and shape may be taken. It is still an open question whether it is better to remove the cartilage with perichondrium or subperichondrially. Smith and Whale feel that if the resection be subperichondrial there is a possibility that some new cartilage may be formed, thereby strengthening to some extent the weakened part of the chest wall and covering the cut ends of the cartilage. Gillies has told me that, although there may be a formation of some new cartilage, it will not be to such a degree as to strengthen markedly the weakened wall. Cases which he reexposed after the elapse of several years showed no regeneration. In several cases a misdirected incision in the cartilage was as clearly seen as if performed yesterday. The cartilage should preferably be taken from the right side of the chest to avoid the possibility of injuring the pericardium by causing pleurisy followed by pericarditis. It also avoids the possibility of causing a concussion of the heart.

It is more convenient for a right handed operator. Before the operation a piece of nasal snare wire is boiled and used as a measure to determine the exact length and width of cartilage needed. More cartilage than is required for the case should be excised, to insure an ample supply in the event of accidents and infections. It may possibly be useful for others. If the graft is used as a homologous one, it is essential that the blood be examined for syphilis. The cartilage may be removed in part or throughout its whole thickness. It all depends upon one's need. A scalpel, a sharp undermining elevator and a blunt retractor are the only instruments necessary for its removal. The excess is hoarded under the skin of the chest. If the operation is to be performed in two steps, as in the case of Ott, the whole amount is inserted beneath the undermined skin. As soon as one removes the cartilage it is immediately wrapped in dry sterile gauze and placed on a sterilized side table with edges raised to prevent disaster during the shaping of the graft. The chest wound is sutured by an assistant and the thorax strapped as for a fractured rib thereby avoiding pain which is otherwise likely to be intense. The instruments which have so far been used should now be discarded and a fresh set used for the nose.

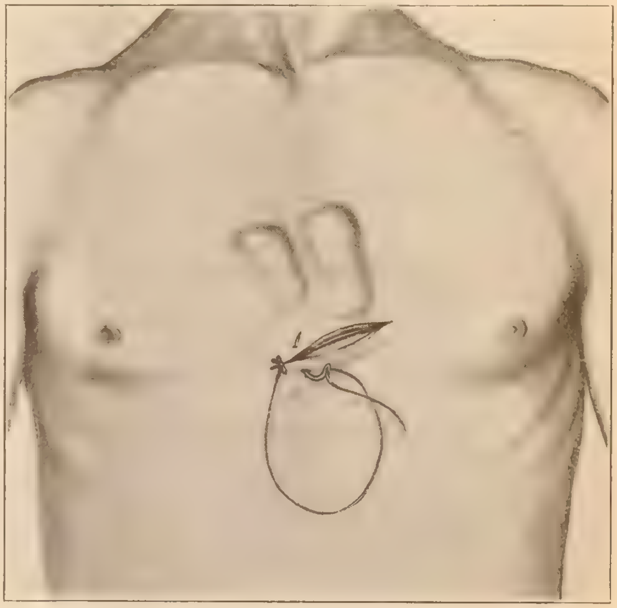


Fig. 4.—The cartilage graft hoarded beneath the skin of the thorax for future use.

A photograph should be taken and a plaster cast made before starting any surgical procedure. They are inexpensive and the casts not difficult to make. They form an excellent record. Wax models taken from the plaster casts are also valuable as records, but their merit is artistic rather than scientific. They are more realistic and admirably suited for museum purposes. The wonderful models, such as those in the great collection of Major Valadier at the Crystal Palace, and in the museum of the Royal College of Surgeons, are the last word of all that has been attained in the way of wax model surgical records.

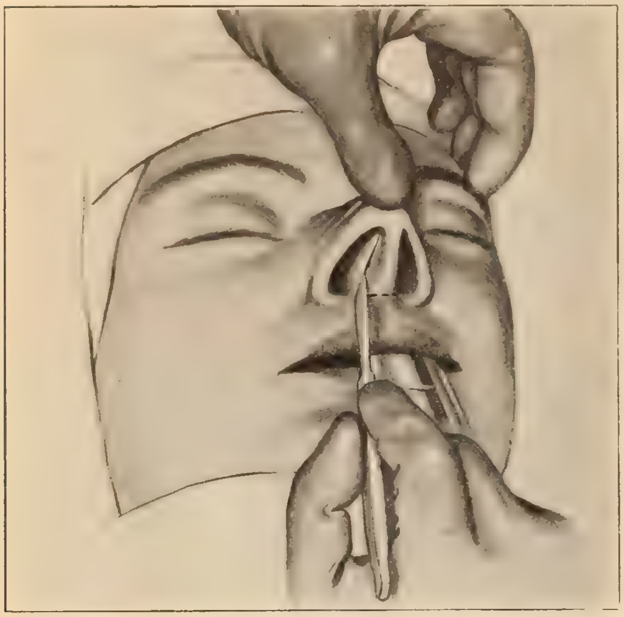


FIG. 5.—The columella incision.

Other nasal incisions commonly practised are infraglabella, inner canthus, alæ nasæ, and horizontal tip end incision.

THE COLUMELLA INCISION.

A vertical incision is made near the junction of the skin and mucous membranes of the columella carried through its whole length, brought forward around the columella at its base and upward to the opposite side. The columella is now hooked backward and held out of the way by an assistant. The septal mucous membrane on both sides is freed for a short distance. This is done for the purpose of securing a firm hold and accurate approximation when suturing. The skin over the depressed bridge is undermined to the infraglabella region, for the purpose of making a bed for the graft. The graft is now properly shaped to the desired pattern and a triangular piece excised at its proximal end, for the purpose of angulating it. The perichondrium over the bridge of this excised triangular piece is left intact so that it may act as a hinge, and the rest is removed. The graft is now inserted in the nose and lower part bent to a right angle, its end fitting into the loose tissues at top of the philtrum of the columella. All septal cartilage is removed from columella if present and the edges and middle are so trimmed that they envelop the new graft. The wound is now closed, using fine horsehair, care being taken to secure accurate approximation of septal and columella flaps. The pressure bandage so generally used in such cases is omitted, its only use being in case of excessive bleeding. The nasal wound is kept clean for several days after the removal of the stitches, which is generally after seventy-two hours.

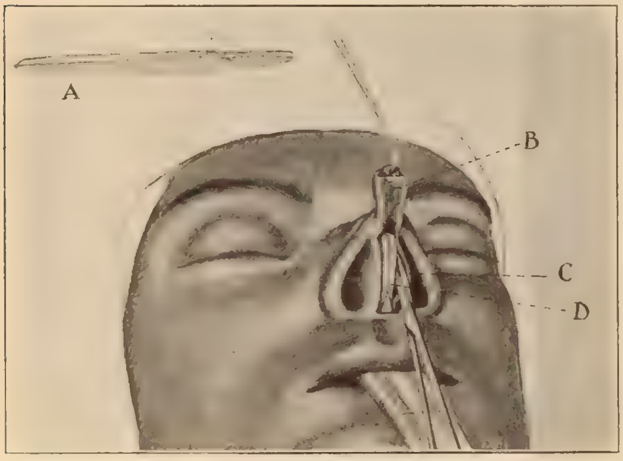


FIG. 6.—A, the cartilage graft with triangular piece excised for the purpose of angulating it. A, perichondrium intact over the excised cartilage to act as a hinge when bending the cartilage to a right angle; B, Columella hooked backwards; C, Denuded septal membrane; D, cartilage of the septum.

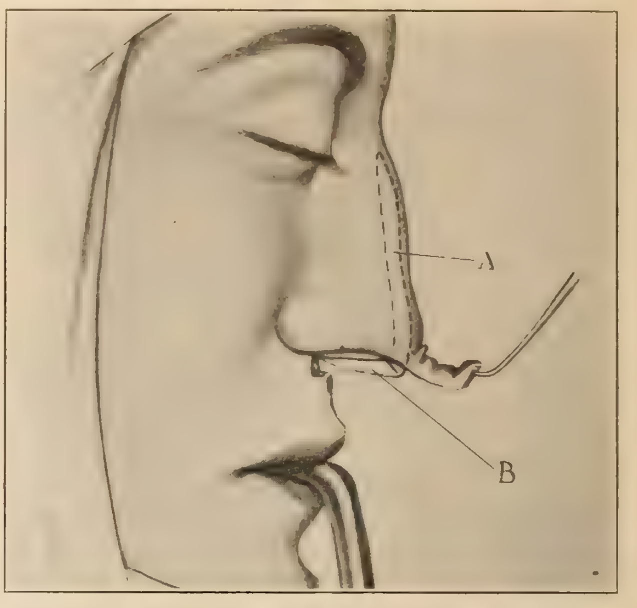


FIG. 7.—A, the graft inserted in his bed; B, the cartilage bent to a right angle to be enveloped by the folds of the columella.

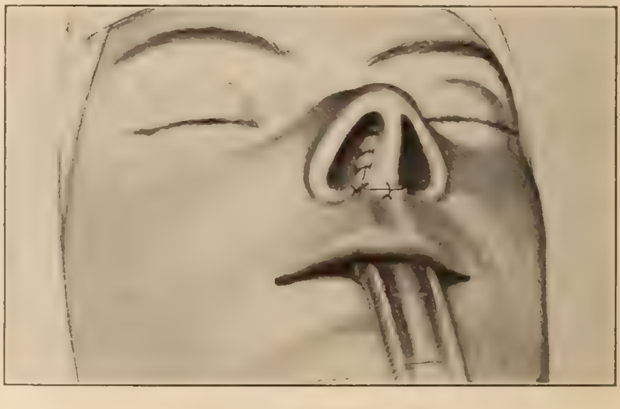


FIG. 8.—The columella sewn

CONCLUSION.

Interest in plastic surgery is quite certain to outlive the war which excited it. Most of the plastic surgeons who worked at the Queen's Hospital, Sidcup, practised our specialty before the war. Thus it has come about that otolaryngologists, by a happy combination of the broad principles of general surgery with their own special technic, have produced a tremendous amount of wonderful work the principles of which will live forever.

It is not my purpose to give a history of rhinoplastic methods. The operation is of the greatest antiquity. It was performed in India thousands of years ago for the relief of the disfigurement caused by punitive mutilation of the nose. This is known as the Indian method, by which an effort was made to use any tissues about the nose, inverting them, as a nasal lining and covering them by a forehead flap. Then there is the Italian method or Tagliacozzian, in which a pedicled flap was transplanted from the arm; and the French, in which cheek flaps were used. It is only natural as the result of the great amount of valuable work performed recently in this line that history will record a fourth prototype and name it after that great surgeon, author and soldier, Major H. Delp Gillies.

24 East Forty-eighth Street.

Qualifications a Peroral Endoscopist Should Possess*

By JOHN W. MURPHY, A. M., M. D.,
Cincinnati, Ohio.

The number of men who will do endoscopy must always remain limited. The very nature of the work we are called upon to do, the limited field for the specialist and the poor financial returns in connection with the expensive equipment one must possess even to attempt the most simple extraction, will always keep our membership limited. Nor is it necessary that a large number of men should devote the time and money necessary to acquire the experience and technic one must possess to do this work successfully.

A very few men, even in the larger cities, will be able to take care of all of the cases that will be likely to come their way. The field is so limited that it must always be looked upon as a side line of more remunerative special work of the laryngologist, and I fear the number of successful laryngologists who are going to find the work congenial must always be limited. To be happy in this line of work, one must be an enthusiast in addition to other necessary qualifications which I consider essential.

I would put first among these, that the successful bronchoscopist must be of a mechanical turn of mind. No two cases are alike, and unless you are quickly able to make changes in your armamentarium and technic, failure will result.

The next important qualification I would say is normal vision. Even a slight error of refraction is somewhat of a handicap, and the presence of a considerable error makes the task almost impossible. The eye soon becomes exhausted from looking through a long narrow tube with a bright light at the distal end. This is where teamwork becomes most valuable and time saving. When the eye becomes weary we are not sure as to what we are seeing, and if an expert eye and hand can relieve you at this critical moment your relief will be great and your success more sure. If the operator is unfortunate enough to have reached his twoscore years, as I fear most of us have, then he must be provided with suitable lenses adapted to the suitable length of tubes he is going to use. Without a clear cut outline of what is going on at the distal end of the tube, any manipulations are not only dangerous to the patient but invite disaster and failure to the operator.

A third and very essential qualification of the up to date bronchoscopist is that he should have a good surgical training. He should feel as much at home in doing a tracheotomy or an external esophagotomy as he would be in doing a tonsillectomy. While a tracheotomy is not, as a usual thing, a difficult surgical procedure, yet when it has to be done in an emergency, and in the thick, short neck of the young child, it becomes one of the most difficult of surgical procedures.

I am sure, as I look back over my earlier work, that I have had several cases that would have been on the other side of the ledger had I performed my tracheotomies earlier, while the little patient was in condition to withstand the shock, and not have waited until the patient was exhausted. Unfortunately, I was imbued with the false notion that, with the advent of the bronchoscope, to resort to tracheotomy was a confession of failure, and that it must be resorted to only as a last resort. Every operator should adopt the technic best suited to his method of working.

As I said before, had I been willing to do earlier tracheotomies, I would have had a better measure of success. While I know this teaching is contrary to the teaching of some of our very best men, yet we are not all equally skillful in the management of these desperate cases, and when the life of the patient is at stake, we should not be bound by any prejudices but follow the course that is safest for the patient.

The fourth and last qualification which I shall mention is contained in the scriptural injunction: "Now abideth faith, hope, charity: these three; but the greatest of these is charity." He who goes into this work with the expectation of reaping adequate emoluments from it is doomed to disappointment.

However, if he takes up this work as a side issue, and is willing to devote time, money and mechanical skill in an effort to improve and develop a line of work distinctly in a field by itself, he will find the work most fascinating. The gratitude of the parents, and the consciousness of possibly having saved a life, or at least of having relieved suffering in a little child, must most often be your only reward in your successful cases.

---

*President's address at the third annual meeting of the Association of American Peroral Endoscopists, Boston, Mass., June 1, 1920.

On the other hand, even though you had nothing to do in putting the foreign body where it was, yet your failure to remove it successfully will lay you liable to most violent condemnation by the parents and friends, with possibly a threatened damage suit for malpractice.

All these little incidents have fallen to my lot during my twenty odd years of peroral bronchoscopy. As I now look back over my work as a specialist, I derive great pleasure in living over again some of my most difficult foreign body extractions. In considering a quarter of a century of progress since I first became interested in peroral bronchoscopy, I am particularly struck by the advances that have been made in this line of work, during that time, and much of this progress has been due entirely to one of the members of this society. We see, therefore, what can be accomplished by one man by perseverance and determination, when he is willing to give up a lucrative practice in his chosen profession and see an income dwindle to almost nothing in order to develop and perfect a new field of bloodless surgery. Formerly all cases of foreign body, either of the lungs or the esophagus, were supposed to be purely surgical cases.

As I said before, while the financial returns are small, yet the field is so new and possesses such wonderful possibilities for original research work that it will remain as a most fascinating one to the enthusiast.

An Unusual Cataract Operation

By HOMER TUTTLE, M. D.,
Ithaca, N. Y.

I report the following case of cataract because of its unusual occurrence:

Case.—Mrs. L., aged seventy-four, had always had good health and good vision until six years ago when she suffered an attack of pink eye, as she called it, in her left eye. The attack of inflammation in this eye doubtless attracted her attention separately to the right and she noticed that the vision in this eye was very poor. From that time on her vision failed rapidly in both eyes. She had been totally blind in both eyes for over four years, and had had to be led from place to place. Light perception and projection were good. No fundus reflex and no iris shadow were present. Urine was negative. The patient had had attacks of asthma at times and coughed some in the mornings. She was well nourished and inclined to be plethoric. A diagnosis was made of mature cataracts of both eyes.

OPERATION.

The patient was prepared for operation upon the right eye, which was performed the second day following the examination, at 3 p. m. A ten per cent. cocaine solution was used, instilling one drop into the right eye at five minute intervals, repeating the operation four times. Anesthesia being complete, a Graefe knife was used and the corneal incision was completed without accident, except, just as the incision was finished, the patient gave a violent jump, expelling the lens intact within its capsule out through the incision. It fell upon the towel upon which her head was resting. She said, "Oh, I didn't mean to do that! Have I injured my eye?" I removed the speculum as quickly as possible, expecting a profuse prolapse of vitreous. As I removed the speculum she exclaimed, "I can see! I saw your hand!" As there was no prolapse of either iris or vitreous I closed the eye with a light gauze dressing, shield, and bandage. Patient had no pain following the operation and slept well the first night. The bandage was removed the next day at 3 p. m. The anterior chamber had reformed and the eye was looking fine. I dressed it again with light gauze and bandage.

The eye was dressed daily, after cleansing with boric solution, without any untoward symptoms until the ninth day. During the night previous she had a violent coughing spell and when the dressing was removed the next day a small bead of vitreous, about two mm. in diameter, was protruding from the upper central part of the corneal wound. This was touched with a five grain solution of silver nitrate and the eye dressed as before. Although cocaine was used before applying the silver solution, the patient complained of pain and was restless all that night.

The eye, however, continued to improve, and on the twenty-fifth day the bandage was left off entirely. The patient at this time could without lenses distinguish objects about the room. Two weeks later the refraction was tested. With an S+10=C+3.00×180, distant vision was 15—30. Adding an S+6 to the distant correction she was able to read Jaeger's Test Type No. 4. She was given a pair of X bridge spectacles, with both distant and near corrections, and went home happy. The pupil was a little irregular in shape, slightly vertical oval. She would not submit to an operation upon the left eye. She said she was satisfied to see as well as she could with the right. I saw her again in two years when the refraction was examined and found to be practically the same as when first made.

This case to me is unique, because of the good result and happy termination from what might have been a total loss of vision in this eye.

307 East Buffalo Street.

Gunshot Wound of Lateral Sinus*

By ROBERT H. FOWLER, M. D.,
New York,
Formerly Major in Base Hospital No. 61.

It is a pleasure to have the opportunity of presenting photographs made at Beaune, Cote-D'or, France, at the time of the Argonne drive, with relation to the use of Dakin's solution in mastoid surgery. The following is a brief report of a case of acute mastoiditis, left, with thrombosis of lateral sinus following gunshot wound. A simple mastoid operation was performed, with the removal of bone fragments from the lateral sinus and resection of the left jugular vein, with recovery.

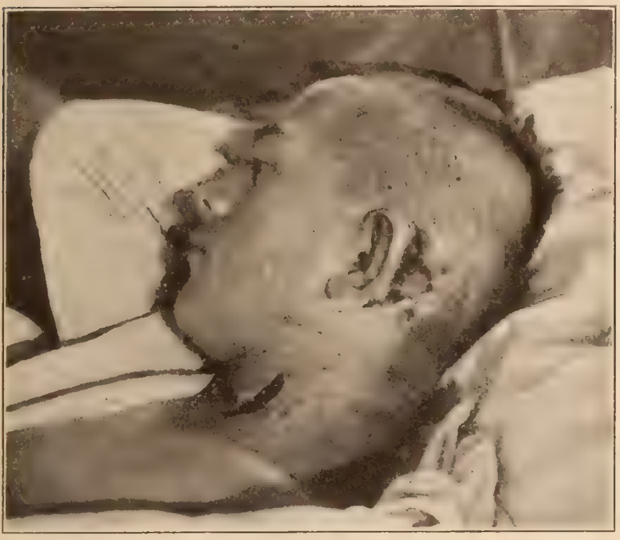


FIG. 1.—Tangential wound, left lateral sinus, healing after operation.

CASE. — Private James C., Company E, 110th Infantry, Base Hospital No. 61, bed twenty-nine, ward six. The man's history showed a gunshot wound at a point half an inch back of the lateral sinus. On his field card was the simple record that a foreign body, embedded in the mastoid process, had been located by x ray and removed at Field Hospital No. 9. The patient had made an apparently complete recovery from his first operation, but turned up in Base Hospital No. 61 later with all the signs of an acute mastoid infection. This diagnosis was borne out on x ray examination, and operation was done promptly. After the simple mastoid operation had been completed in the usual manner, the lateral sinus was exposed by making a posterior incision just below the scar of the original wound. A condition of affairs was then found which, so far as I know, has no parallel. The bullet, flying from right to left, had struck the sinus wall with exactly that speed and force required to fracture the bony sinus wall without breaking the wall of the vessel within. Perhaps you have seen a nut hit a full, square blow with a hammer, the shell broken into fragments, and the kernel of the nut still intact. The sinus wall had been flattened from without inward by pressure of these bony fragments, and contained a clot which had not yet become infected. It was as paradoxical as though you were to smash in the top of an egg shell without spilling the egg. The bullet or shell fragment had been removed at the field hospital and healing had taken place which was more superficial and apparent than real, for at the later operation two pieces of bone, each the size of a dime, were found embedded in the thickened wall of the sinus. When the fractured bone had been removed, the sinus was found to contain a thrombus which was exposed for examination. It was decided that the internal jugular had best be tied off because of the high probability of infection of this thrombus within a few days. It had, by the nature of things, been exposed during this operation to the pus which had filled the mastoid cells. Jugular resection was done. Three days later, the temperature rose suddenly, and fell again quickly after thorough drainage had been established through the lower wound. Dakin's treatment was used in both wounds, and the patient made a complete recovery.

The second photograph of this case shows the Dakin's tubes in place, and illustrates the special care taken to prevent infection travelling through these Dakin's tubes. A bit of gauze, dipped in Dakin's solution, was used to cap the upper end of the tube.

CONCLUSION.

1. The consensus of opinion among many of the surgeons in the A. E. F. was that under Dakin's treatment wounds of various character were less likely to become infected and were more quickly cleared up, if infected, than by many other well known methods of treatment.

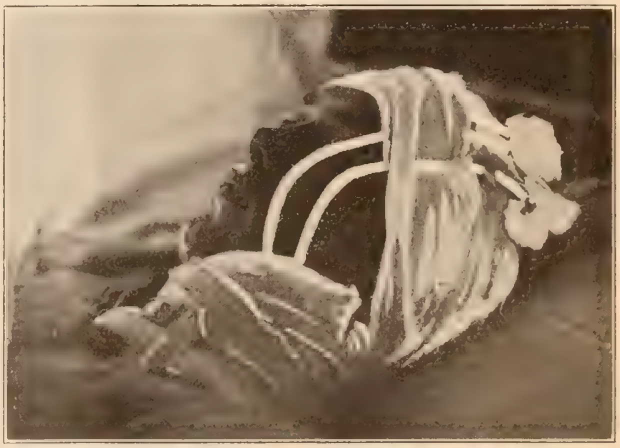


FIG. 2.—Technic, Dakin's tubes, dressings, mastoid and cervical wound.

2. The discomfort of the dressings is lessened by the use of Dakin's solution at regular intervals.

---

*Reported to the Section in Otology, New York Academy of Medicine, December 19, 1920.

3. Where Dakin's treatment is easily available it may be used in mastoid wounds with success.

If every doughboy could voice his gratitude for having been spared pain it would indeed be a fitting tribute to such men as Dakin, Rockefeller and Carrel. New York should be proud of these men who had the foresight and vision to work this thing out and have it ready at the time it was so much needed by our boys.

153 East Sixty-second Street.

Resection of the Tarsus and Conjunctiva (Combined Excision) with New Instruments*

A Review of Three Hundred Cases

By ARTHUR S. TENNER, M. D.,
New York.

Since Wootton's classic paper (1) on the subject of the Kuhut-Heisrath operation for the cure of trachoma, the operation of combined excision has achieved a slow but gradually increasing popularity. However, the American literature on the subject is exceedingly scanty and from a perusal of it and from conversations with other ophthalmologists it is evident that this operation is not so extensively performed as its good results warrant. During a recent visit to Egypt, where trachoma is so prevalent and where there are numerous clinics for its treatment, the author was surprised to learn that ophthalmic surgeons of Egypt were singularly unenthusiastic about this operation. Their objections were that it was time consuming and bloody. These objections, as well as others that are urged against tarsal excision, are in a great measure nonexistent with the improved instruments and technic which I am presenting herewith. These were developed and used by the author in over three hundred operations, performed during 1919 and 1920 in the Near East.

Trachoma may be divided into two types based on its clinical and pathological manifestations. First, follicular trachoma; second, trachoma with granulations, thickening of the conjunctiva and tarsus. Both are reactions of the tissue to external injurious influences and may occur independently or in a mixed form. But the latter is the most important and the most grave. The formation of follicles may occur in other forms of conjunctivitis and in such cases may disappear spontaneously without the formation of cicatricial tissue. But the second type consists of a chronic, granulating inflammation of the subepithelial tissue with an increase of lymphocytes, plasma cells and histocytes, accompanied by young connective tissue cells which finally lead to cicatrization (2). During my stay in the Near East, where over four thousand cases of trachoma came under my observation and care, cases that could be placed in the first class, pure and simple follicular cases, were extremely rare. Many young children, even infants, had trachoma in an advanced form with great thickening of conjunctiva and tarsus. In the purely follicular cases, expression was made. A good idea of the small proportion of follicular cases seen may be obtained from the proportion of expression operations to those of excision, that is, there were twenty-five of the former to three hundred of the latter. Combined excision was done on a child of two years of age with excellent results. It was performed on a man of sixty-five with equally good results. All cases of granulating, thickened conjunctiva and tarsus of the upper lid with or without pannus, with or without ulcers, were considered suitable for operation. Cases of gelatinous degeneration were rather common and combined excision was performed with excellent results. To state the indications for the operation in one sentence: In all cases of active trachoma with evidences of the formation of cicatricial tissue, or in those cases with such formation of granulations and thickening that the formation of cicatricial tissue is inevitable, operation should be performed. If there is pannus, tarsal excision should be done to relieve the pannus; if there is no pannus, it should be done to prevent pannus.

As my technic differs in some respects from the usually given, I shall give it in some detail.

Local anesthesia is preferable and was used in all but young and unruly children. The following method was used: First the conjunctival surface of the upper lid is gently rubbed with a cotton tipped toothpick which has been dipped in epinephrine solution and then into pure cocaine crystals. Following this a subconjunctival injection of one per cent. cocaine epinephrine solution is made into the conjunctiva of the fornix, so that the latter balloons up. The needle is then thrust further in, penetrating the tarsus and more solution injected, especially at the inner canthus, which is a particularly sensitive area. Wait at least five minutes after rubbing the conjunctiva before beginning operation.

The subconjunctival injection serves a triple purpose; in addition to producing anesthesia, it marks out the line between the diseased and healthy tissue and dissects the conjunctiva by lifting it up. For these reasons, a subconjunctival injection is given even when general anesthesia is used, except that in the latter case the injection consists of sterile water or normal saline solution.

The lid is then everted and held by the fingers while by means of a specially designed knife (Fig. 1A) a horizontal incision extending the length of the lid is made in healthy conjunctiva at the limits of

---

*Read at a meeting of the Section in Ophthalmology, New York Academy of Medicine, November 15, 1920.

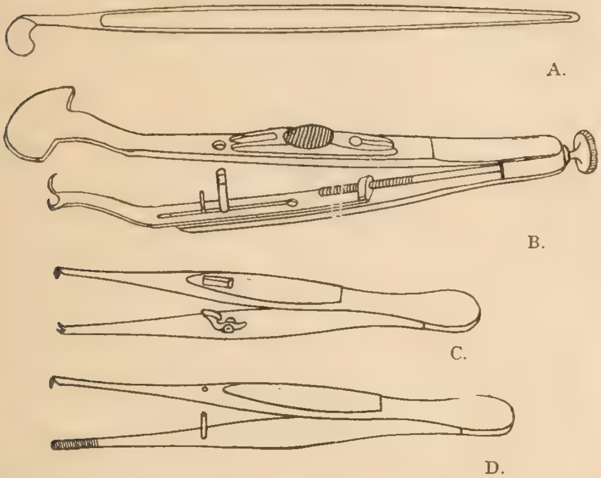


FIG. 1.—Instruments used for combined excision. A, specially designed knife; B, lid forceps; C, two mouse toothed forceps with catch; D, suture forceps.

the trachomatous invasion (Fig. 2). If the operator prefers he may use instead of his fingers the lid forceps which shall be described later (Fig. 1B). This gives a better exposure but the author prefers not to use the forceps at this stage because he wishes to diminish instrumentation as much as possible on account of injury to the tissues, and secondly because immediately after making the incision the lid forceps would have to be taken off and replaced by the mouse toothed fixation forceps; so by using his fingers, instead of the lid forceps, the operator avoids considerable trauma and also saves considerable time. The ballooning of the conjunctiva and the edema produced by the injection are advantageous and helpful and enable the operator to dispense with instrumentation up to this point. The incision completed, the upper lip of the incision is seized with two mouse toothed forceps with catch (Fig. 1C), which are then held back by the assistant while the operator with the back of his knife, or blunt pointed scissors, completes the dissection of the conjunctiva for about four mm. This is a bloodless dissection because actually performed by the subconjunctival injection. The sutures are then inserted in the lower lip of the wound, double armed fine silk sutures being used, so that the loop is on the epithelial surface. Three to five sutures are employed (Fig. 3). The sutures are then laid on the cheek out of the way, and the operator proceeds with the excision. This step is performed as follows: The lid is seized with a forceps specially designed for the purpose (Fig. 1B). I have had this forceps made here, but I am informed that an identical one has been in use in Germany for some time. This forceps is a modification of the Falta entropion forceps, but, beside the different type of hooks on the upper blade, it has the added advantage of a screw at the end by means of which the hooks can be drawn back fifteen mm., the solid under blade remaining fixed. Thus the hooks being inserted in the conjunctival side of the upper lid, as close to the cilia as possible, the everted lid is drawn back over the solid blade which is in contact with the skin of the lid. The incision is then made slightly bevelled, parallel to the border of the lid and one or one and a half mm. from it, through the tarsus, until the appearance of well known blue gives warning of skin (Fig. 4). The incision is completed by joining with the original incision and the tarsus lifted from its bed by dissection. In dissecting the operator should hug the cartilage. Use either the scalpel or blunt pointed scissors. Occasionally there is considerable hemorrhage from the arteries at the inner or outer canthi, and hemostatic forceps have to be applied. Cutting these arteries is best avoided by hugging the tarsal cartilage very closely.

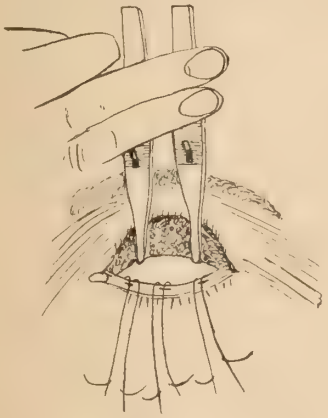


FIG. 3.—Mouse toothed fixation forceps applied to upper lip of wound and held back over brow by assistant. Conjunctiva dissected and sutures inserted.

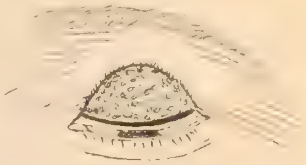


FIG. 2.—Upper lid everted, injected and first incision made.

The sutures are then completed, the middle one first. The needles of each suture are passed from the conjunctival side through the narrow rim of tarsus and, emerging on the skin, are loosely tied (Fig. 5). The operation is now finished. There should be no wrinkling or puckering of the lid. There may be, however, inability to close the lids completely, owing to the paralysis produced by the cocaine. Sutures are removed in five or six days.

The author claims for the operative technic and instruments described the following advantages:

1. The knife having its cutting edge at right angles to the shank is easily handled, and there is no interference by any part of the orbit or face. The small cutting edge enables the operator to keep the incision in the tarsus parallel to, and equally distant from, the lid border throughout its length, and the absence of point adds to its handiness and increases its safety.

2. The forceps, by putting the lid in the stretch, enables one to do an almost bloodless operation, and facilitates the resection of the tarsus markedly.

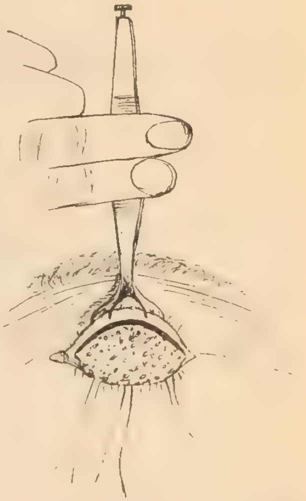


FIG. 4.—Lid forceps applied, and second incision made parallel to lid border and meeting first incision.

3. The subconjunctival injection of the conjunctiva of the fornix makes a bloodless dissection of the conjunctiva and prevents postoperative adhesions.

4. The forceps with one blade mouse toothed and

the other blade serrated is used in suturing. The serrated blade is applied on the skin side and the mouse toothed on the conjunctival side. It holds quite as well as the regular mouse toothed forceps, but does not cause nearly as much trauma (Fig. 1D).

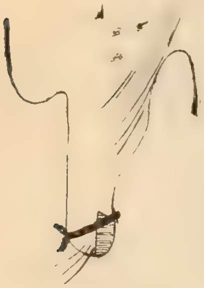


Fig. 5.—Cross section of lid, showing operation completed.

Of the three hundred patients operated upon, practically all were cured as far as appearance or symptoms were concerned. In a few cases the patients, though giving no sign to the examining eye, were troubled with persistent mucopurulent discharge, very resistant to treatment. All these patients had been subjected to exposure or continued contact with trachoma cases. A few patients showed a slight shortening of the lid, due to removal of too much conjunctiva, but not sufficient lagophthalmus to produce exposure of the cornea or any harmful effect. After excision trichiasis occurred in three cases. These trichiasis cases were remedied by a second operation, the insertion of a mucous membrane graft taken from the lips. In one case a pannus developed in one eye one week after the operation, which cleared up in six weeks, whereupon pannus began immediately in the other eye. The lids were seemingly in perfect condition, without a trace of trachoma throughout this time.

There was not a single case of ptosis. In two cases healing did not take place by first intention. Masses of granulation tissue sprang up on the under surface of the upper lid, which were very resistant to treatment. Both these patients were suffering from systemic diseases. Accordingly, I should advise that, before undertaking this operation, systemic disease, if present, should be eradicated, or at least the patient put in the best possible physical condition.

In three of the earlier cases in which operation was performed, the patients showed some slight limitations of the movements of the globe, but all such patients were operated upon before I had developed the technic outlined.

RÉSUMÉ AND CONCLUSIONS.

The operation of combined excision should be restricted to the upper lid. It is never necessary in the lower. It should be done under local anesthesia, except in children. It should be done with a minimum of instrumentation to reduce trauma as much as possible. Its scope is broad and applicable in all cases except the purely follicular type. In conclusion, I believe we have in this operation the only means of quick eradication of the disease and prevention of its complications and sequelæ.

Instrumentarium for combined excision: Luer hypodermic syringe, two c. c.; knife (Fig. 1A); lid forceps (Fig. 1B); two mouse toothed forceps with catch (Fig. 1C); blunt pointed scissors; curved or straight hemostatic forceps, somewhat heavier than mosquito forceps; suture forceps (Fig. 1D), one blade mouse tooth, one blade serrated; needle holder and needles.

REFERENCES.

1. Wootton, H. W.: Tarsal Resection, *Archives of Ophthalmology*, 1910.

2. Hiwatari, Kazuo: Concerning the Nature of Trachoma, *Archives of Ophthalmology*, vol. xlix, January, 1920.

70 East Fifty-sixth Street.

Intranasal Operations with Special Reference to Postoperative Packing

By JOSEPH W. MILLER, M. D.,
New York.

Before I touch upon this subject, I shall endeavor to review the history of the development of intranasal operations up to the present time. Prior to the development of modern rhinology, nasal polypi were removed by the general surgeon, with ordinary pliers and without the control of light. It is understood that other intranasal structures were greatly damaged during such a procedure, and that the smaller polypi often remained behind goes without saying.

This somewhat rough and not less radical procedure in time got into the hands of the rhinologist. Then, nasal polypi were removed under the control of light, with the aid of fine instruments and without damaging the surrounding structures. Under such management attempts to diminish the size of hypertrophied and diseased inferior turbinates by means of the electrocautery and the intranasal removal of spines and ridges of the nasal septum became the object of the rhinologists. These operations remained for a long period of time the only ones attempted by the specialists. The treatment of the accessory sinuses through intranasal routes, however, is only of recent date, but out of it grew suddenly an immense field for intranasal invasions.

With the development of intranasal operations for the treatment of the accessory sinuses, many methods which call for the use of sharp instruments were occasionally laid aside, though hypertrophic parts of the inferior turbinate were now removed in that manner instead of, as before, with the electrocautery. This procedure, especially when the cavernous structure of the inferior turbinate was injured, gave rise to great hemorrhage, and, in order to avoid such consequences, tampons were resorted to, following every intranasal operation. Also, after the use of the electrocautery, in order to avoid adhesions, packings were inserted between inferior turbinate and septum.

Recently, rhinologists have neglected this method, and have stopped packing postoperatively; that is, if the patient did not bleed after a given time following the operation. During this period the work of the rhinologist was none too satisfactory, partly because of too radical surgical undertakings within the field of the nasal chambers, such as the reckless removal of an hypertrophied inferior turbinate, and partly because of leaving the operated nasal chamber unpacked and so exposing the patient to the danger of a severe postoperative hemorrhage.

The followers of this new and extremely radical course later on discovered that when doing any sharp operative work within a given nasal chamber, especially when attacking the cavernous structure of the inferior turbinate with cutting instruments, we must either pack the respective nasal chamber, or else keep the patient under control for a few days in the hospital. Nevertheless, it is true that the old postoperative method of packing the nasal chambers does not present the only good and correct procedure since many disagreeable consequences may result following its use. Among other results is the danger of otitis media, tonsillitis, elevation of temperature, and the storing up of fibrinous collections, the latter of which is especially the result of tight packing on the nasal mucous membrane, and may delay healing considerably.

To obviate the danger of an otitis media, one should try to impregnate the packing with strong disinfectants and astringents, such as iodoform, vioform, orthoform, aristol, or solutions such as hydrogen peroxide, iron sesquichloride and alum. Some (Struijken and Aufrecht) have used for intranasal tampons blownup rubber fingers. Other rhinologists (Brünnings and Von Eicken) made good use of the rubber sponge. But the most commonly tried packing was iodoform gauze, which is still in use at the present day. To prevent the occurrence of otitis media due to the downflow of secretions from the packing to the tubes, some recommend the insertion of the finger in the rhinopharynx and push the pendulous tampon back into the respective choana. The method of placing the finger in the posterior choanæ by way of the nasopharynx is also very useful when one wishes to pack a given nasal chamber tightly for the control of a large hemorrhage. By packing against the finger, the entire nasal chamber may be packed without pushing down the gauze into the pharynx. Others resort to the use of a balloon—rhinorhynter of Laurens—in order to check severe secondary hemorrhage, and assert that it is the best method of checking the most profuse secondary hemorrhage, even though it gives rise to an annoying sensation of pressure due to intranasal tension. Von Navratil succeeded with this procedure in reducing the danger of an otitis media almost *ad minimum*. He warns, however, against the use of the posterior rhinopharyngeal packing, Belloc's tampon, following intranasal operations, no matter how profuse the bleeding, as its use gives rise frequently to a double otitis media, due to the pressure of the packing upon the muscles of the tube, thus partially paralyzing. The muscle play and suction action of the tube is thus prevented, its most important physiological function impaired, and, therefore, a wide portal of entry is opened for the invasion of pathogenic bacteria to the middle ear. This tampon may be used in postoperative cases upon the rhinopharynx, such as following the removal of adenoids with consequent profuse bleeding. In these cases the tampon is best made of iodoform gauze, inasmuch as it aids more readily in the absorption of needless products from the operated area. It should be pointed out that Belloc's tampon must be of sufficient size to enable one to pack the entire rhinopharynx, must sit well no matter where it is placed, and the patient be kept quiet, the head elevated, a bag of ice placed behind the neck, and the patient instructed to inspire deeply. Another unpleasant condition is the appearance of tonsillitis following intranasal or postnasal packing.

Through the investigations of Most, we find that the lymph vessels of the nasal chambers communicate with those of the tonsils and other parts of the throat. It is the opinion of Fränkel (1) that the tonsillitis following intranasal operations is truly traumatic angina, the infective virus of it travels from the operative wound area through the lymph channels to the tonsils, is deposited there, and sets up an inflammation. Animal experimentation by Lenart (2) and others upon anatomical, microscopical and physiological bases tends to bear out the opinion of Fränkel.

On the other hand, Von Navratil found, after many years of clinical observation, that the tonsils were not infected by way of the lymph stream. He observed that on the second or third day following operations on the nose and throat, especially where swallowing becomes difficult, various forms of tonsillitis appear. In other words, whenever the patient refrains from swallowing he fails to press the contents entirely out of the tonsillar crypts as he does normally. The secretion remaining stagnant degenerates, invites the presence of bacteria, absorbs the same within the crypts and so flares up an inflammation. Therefore the appearance of postoperative tonsillitis rests entirely upon insufficient and faulty swallowing.

Nor are the lymph channels to blame for the transfer of the infection from the wound area to the tonsils, as has been demonstrated experimentally by some workers. These investigators have shown that, by injecting a dye into the lymph channels of the nose, pigment particles have not been found macroscopically or microscopically within the tonsils. They have been demonstrated, however, in the respective cervical glands even macroscopically. The most important means of determining the course of the lymph channels is to study the progress of metastasis from carcinoma of the nasal chambers. It is then observed that the tonsils are never involved, but that the metastasis strikes first at the respective cervical lymph glands.

Very annoying is the occurrence of fever following packing of the nasal chamber. This complication usually arises when the tampon is left in place for two to three days, and more frequently after the use of the electrocautery. But in spite of all these complications, the result of postoperative intranasal tamponage, it is rather a risky undertaking to send the patient away without any packing whatsoever, especially after partial or complete removal of an inferior turbinate. Recently, rhinologists began to realize the uselessness of total resection of the inferior turbinate. Only in rare instances is partial resection indicated, and even then it is best to diminish its size with caustics or reduce it with the actual cautery.

The best method of procedure seems to be the following: After each intranasal operation, it is best to pack with sterile plain gauze impregnated with either sterile petrolatum or boric acid salve. This packing must be even, uniform, packed layer upon layer, and must not hang down suspended in the rhinopharynx. There is only one exception to this rule, and that is after the partial or complete removal of the middle turbinate in cases of suppurative sinusitis where tamponage is not advisable. Here drainage is the object sought, and packing, therefore, has no place; but the patient then must be under the absolute control of the rhinologist for several days. The various forms of tonsillitis are best prevented by forceful swallowing movements, the frequent gargling with hydrogen peroxide, or the sucking of formamint tablets. I have followed this method for the past two years, and never had a case of complicated otitis media, tonsillitis, secondary hemorrhage, or intracranial involvement.

On the day of the operation the patient is told to rest at home and apply ice cold compresses over the nose. On the following day he may do, if he chooses, light work, and on the third or fourth day any kind of work. The packings are removed on the second or third day and from each nasal chamber on a different day, if possible. After its removal there is hardly any bleeding, and the tampon is free from bad odor.

Another good method of packing the nasal chambers, especially after resection of a distorted septum, is the use of Simpson's intranasal tampons. This form of packing is best suited to cases where the mucous membrane has been accidentally torn, as it approximates the torn edges much more securely. Also, where a piece of cartilage is inserted to cover over an accidental perforation, this form of tampon holds it in place better than any other packing. Finally, in cases where the curtain of the now approximated mucous membranes is desired to occupy a central position, this tampon gives good service. It must be pointed out, however, that these tampons, by absorbing blood and discharges from the operative area, swell enormously and give rise to a disagreeable sensation of pressure which does not give the patient a minute of comfort. These tampons, therefore, if ever used, should be removed from the nasal chambers within twenty-four to forty-eight hours, and both at the same sitting, as the removal of only one tampon will immediately push the septum to the empty side, thus giving rise to a new narrowing of a nasal chamber with a possible consequent obstruction.

REFERENCES.

1. FRÄNKEL: *Archiv für Lar.*, Bd. 4.
2. LENART: *Archiv für Lar.*, Bd. 21.

213 HENRY STREET.

Tumor of the Hypopharynx in a Child of Eleven Weeks*

By D. J. GIBB WISHART, M. D.,
Toronto, Canada.

CASE.—B. B., male, aged six weeks, was first seen on May 6, 1919, by Dr. Alan Brown, who kindly furnished me the following notes: The complaint when I first saw the patient was failure to gain in weight, with continuous vomiting and considerable gas.

Family history.—Two other children, one stillborn, the other died of what the mother termed acidosis. Father not a strong man, but no organic disease. Mother very nervous and high strung, and with a congenital amputation of the forearm.

Personal history.—Child was full term, difficult instrumental delivery, birth weight six pounds eight ounces. Up to that time the child had been breast fed with no other accessory food.

Present history.—On admission the mother stated that the child had vomited continuously since birth. The amounts had been small and at irregular intervals, directly after nursing and up to the time that the baby was fed again. The vomiting was associated with considerable spasm and gagging.

Physical examination.—Weight five pounds thirteen ounces, very small infant, pale, poorly nourished and poorly developed. Heart and lungs normal, abdomen slightly distended. Liver and spleen not palpable. The little finger of the right hand had a very definite angular deformity. Breathing had always been difficult, accompanied by choking. Deep retraction of the lower costal border and suprasternal notch. The breathing was stridulous in character, accompanied by considerable secretion of mucus.

Provisional diagnosis.—When the infant was first seen, there was a congenital deformity of the trachea, although repeated digital examinations revealed no abnormality. During the child's stay in the hospital the weight was stationary until the last few days, when he lost six ounces. The child became progressively worse, breathing and feeding more difficult accompanied by severe choking spells in which he would become cyanosed and almost cease to breathe. The suprasternal notch showed pronounced retraction at all times. The patient died on July 5th, aged eleven weeks.

I saw the child in consultation at a private nursing home at various intervals, between May 23rd and the time of his death, July 5th, and Sir St. Clair Thomson was courteous enough to see the case with me on one occasion.

---

*Read at the Third Annual Meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

As stated above the infant was very thin, and badly nourished, the difficulty in breathing was inspiratory, when excited the distress was evident, and the tugging of the larynx marked. Examination with the mirror was difficult, but a portion of each cord was made out and seemed normal. The epiglottis was folded back, and its edges were flabby. Neither external or internal palpation added any information, nor was any abnormality perceived. During sleep I observed that the breathing became practically normal, it was noiseless and without suprasternal recession.

Bronchoscopic examination was not attempted as it involved removal to another hospital, and this seemed inadvisable in the child's weakened state.

The diagnosis in which Sir St. Clair Thomson concurred was congenital laryngeal stridor, and operative interference was not advised.

An autopsy was performed by Dr. Erb of the staff of the Hospital for Sick Children, Toronto, from whose report the following excerpts are made: The clinical diagnosis was laryngeal stridor, with congenital absence of trachea rings. The anatomical diagnosis was a tumor between the larynx and upper esophageal opening. There was hypertrophy of the sternohyoid, sternothyroid and hypoglossus group of muscles. A congenital fusion of right upper and middle lobes of lung was present as well as congenital malformation of little fingers.

In a dissection of anterior cervical region the thyroid appeared normal. The superficial muscles were apparently hypertrophied. The medium glossoepiglottic fold was hypertrophied and there was a supernumerary left lateral glossoepiglottic fold. These folds would have interfered with the proper closure of the epiglottis. The larynx, vocal cords, and arytenoid cartilages appeared normal. The left pyriform sinus was considerably larger than the right. Just medial to the left pyriform sinus and posterior to the left arytenoid cartilage a tumor was present which was roughly triangular in shape and flattened from side to side from above downwards. The base of the triangle which was situated anteriorly, was formed of a cartilaginous pillar about 1.5 cm. in height and four mm. in diameter, and was located perpendicularly just posterior to the apex of the left arytenoid cartilage. The upper border of the triangle was free and measured about two cm. in length. The lower border of the triangle was formed by the attachment of the tumor of the tissues between the larynx and the upper opening of the esophagus and just lateral to the esophagus and measured about 1.8 cm in length. The left surface of the tumor was smooth, dense and almost white in color, apparently composed of fibrous tissue. The right side was thrown into numerous folds not unlike mucous membrane. The position and shape of the whole mass was such that when the head was flexed on the chest the mass fell forward into the larynx and if the head was held back and towards the right it obstructed the esophageal opening. The tracheal rings were markedly flattened from before backwards and the trachea contained a considerable amount of blood stained mucus.

The microscopic report was a laryngeal tumor. A section was taken through the free border, a small piece of tissue removed so as not to spoil the gross specimen. The right surface of the tumor was covered with mucous membrane consisting of long thin villi. In the centre of these villi there were fairly large capillaries and the villi were covered with columnar mucous cells. The left surface of the tumor was covered with transitional epithelium which did not contain mucous cells. Towards the free border of the tumor this epithelium was thrown into folds forming large papillary projections. Underneath the epithelium the tissue consisted chiefly of fibrous connective tissue, throughout which were scattered small patches of epithelial cells, some of which tended to form glands. There was no cartilage in the section studied, but taking into consideration the fact that the apex of the tumor was definitely cartilaginous in the gross, and the fact that there was glandular tissue in the centre of the tumor it would appear that the tumor belonged to the class of congenital mixed cell tumors, arising from the posterior wall of the larynx. The thyroid was normal.

Examination of the kidneys showed a number of the tubules filled with material consisting of polymorphs, muconuclear cells, epithelial cells and cell débris. The epithelium of many of the proximal convoluted tubules showed a marked granular degeneration and the nuclei stained poorly. There was no evidence of any inflammatory change in the glomeruli. A diagnosis of pyonephrosis was made.

I have been unable to discover any other cases of mixed cell tumors of the larynx in the literature from 1913 to the present day. There are, however, several cases of cartilaginous tumor, including the following: Eschweiler (1) reported a case of cartilaginous tumor the size of a walnut, growing from the cricord. The exact situation and the histological report, however, were not given. Salomonsen (2) also reported a case, and Roos (3) reported a case of a subglottic myxochondroma growing from the posterior part of the right wall just below the cords, in a man aged forty-four. It was covered with smooth epithelium.

Preindlsberger (4) described a case of fibroma in pyriform sinus of a peasant woman aged sixty who had had difficulty in swallowing since the age of three. She had a large pedunculated fibroma growing from the pyriform sinus.

Pollak (5) writing on amyloid tumors of the larynx reported four cases in which the tumor was an isolated growth and not part of a generalized amyloid degeneration. He also collected fifty cases from the literature, ten of these were in the form of polypi on the vocal cords. Most of the cases occurred in patients over fifty years of age, none have ever been seen in patients under twenty years of age.

REFERENCES.

1. Eschweiler: *Ver. Westdeutscher Hals-u. Ohrenaerzte. Koeln.*, December, 1911.
2. Salomonsen: *Frankel's Archib.*, Bd. 28, H. 3, 1914.
3. Roos: *Z. f. O.*,. Bd. 62, p. 228.
4. Preindlsberger: *Monatsschr. f. Ohrenheilk.*, 1913.
5. Pollak: *Z. f. Laryngol.*, 1914.

Practical Points in the Diagnosis of Sinus Diseases from the Point of View of the General Practitioner*

By ROBERT F. RIDPATH, M. D.,
Philadelphia,

Associate Professor of Laryngology, Post-Graduate School of Medicine University of Pennsylvania, Laryngologist to St. Agnes's and the Jewish Hospitals.

It is my purpose to present a few of the many symptoms and diagnostic points of sinus diseases which general practitioners may find of value in their work. I wish to state that the symptoms which I shall discuss are those commonly present, and patients presenting any or all of them should be studied with a view of discovering sinus infection. At the same time we must realize that the symptoms of some infections or malignancy of the accessory sinuses are so obscure and clouded that it requires a rhinologist of considerable experience to make a complete and true diagnosis.

One symptom which is practically always present is headache, the location, severity, time of onset and departure varying according to the sinus affected. Headaches associated by infection of the maxillary sinus are reflected to the supraorbital notch and the inner canthus of the eye, and would be present at the time when the sinus acts as a reservoir for the accumulating pus. This is so when the patient is in an upright position, such as standing or sitting, and the headache would therefore occur during the day, becoming more severe until the patient assumed a recumbent position, thus finding relief. The ostium of the maxillary would be at the lowest point in this position, and would allow drainage, emptying of the sinus taking place. In contradistinction to this is the headache and pain resulting from a frontal sinusitis. This pain is situated over the supraorbital ridge, and radiates upward and backward toward the vertex. The pain is throbbing and sickening in character, and occurs when the patient is in a recumbent position, due to the lack of drainage.

Patients suffering from a frontal sinus infection will describe the pain as coming on a few hours after they have been in bed, and this continues until they are compelled through the severity of the pain to assume an upright or sitting posture. In this position, the frontal sinus is in the best position for drainage to take place, and your patients will state that after they have walked the floor or have been sitting for a half hour or more, the pain is relieved and they are again able to lie down and sleep for a few hours.

The pain and other symptoms recurring at this time, due to the sinus filling with pus, is what is known as morning frontal headache. This should be a sufficiently significant factor for the general practitioner to question the patient more thoroughly and to consider the possibility of a frontal sinus infection being present, and not send the patient to an ophthalmologist for treatment of errors of refraction, as in eyestrain, or headache resulting from eyestrain, the pain comes on after the eyes have been used for some time; whereas, in empyema of the frontal sinus, the pain is greater after the patient has been resting in the recumbent position for a number of hours and the eyes have been in repose. At this point it is well to differentiate the symptoms occurring in a frontal neuralgia and those of frontal sinusitis. The pain of frontal neuralgia is dull and throbbing in character and continuous; that of supraorbital neuralgia is sharp, lancinating in character, and of short duration, reappearing at intervals of fifteen minutes, half an hour, or more. Frontal sinusitis always results from coryza; in supraorbital neuralgia no such history is necessary. Movements, especially those of bending forward, or muscular movements of the facial muscles, will exaggerate and increase the pain, but have no effect in a neuralgic condition. Pressure over the supraorbital nerve will relieve the pain in neuralgia, but will increase it in sinusitis. Tobacco and alcohol increase the intensity of the headache in sinus infection, and relieve it in supraorbital neuralgia.

The pain of an infection of the ethmoid sinus occurring over the parietal region is dull in character and continues in whatever position the patient may assume. There is a fullness in the nose such as that resulting from a cold, and the nares are entirely occluded by the swollen mucous membrane. The headache resulting from a sphenoid infection occurs at the occiput and radiates toward the vertex. We have also a reflex pain occurring from empyema of this sinus situated over the mastoid region, and many mastoids have been opened and found normal when the real factor was of sphenoid origin.

Discharges from empyema of the frontal, maxillary, and anterior ethmoid sinuses, will be found in the anterior part of the nares, usually covering the anterior portion of the inferior turbinate. Pus due to infection of the posterior ethmoidal cells and sphenoid sinus will be found on the pharyngeal wall, and, if of long standing, the breath will appear foul, and is characterized as cocasmic.

Other symptoms directing attention to maxillary involvement will be partial or total anosmia, due to swelling of the mucous membrane, the feeling of one tooth (first molar or second premolar) being longer than the others and more sensitive, malaise, vertigo, fever, and anorexia.

Those relating to frontal infection would be tenderness on pressure over frontal region, a decided vertigo and increase of pain over this region when the patient leans forward, increase of pain in walking, the jarring of the body seemingly the cause, fever of 101° to 103°, and general malaise. A very important symptom, and looked upon by the rhinologist as a danger sign, is the swelling of the upper eyelid. Disturbances of olfaction are present, but not to the extent as that involving the ethmoid.

---

*Read before St. Agnes's Hospital Clinical Society, Philadelphia, November 16, 1920.

Usually in ethmoid infection we have a decided swelling of the entire ethmoid region, and the patient has absolute occlusion of the superior portion of the nares or that part lying between the eyes. The headache, as we have already mentioned, is constant and tense in character, with occasional outshoots toward the deeper structure of the eyes. There is tenderness in the eye itself, with pain on rotation, fever, and, if both sides are involved, total anosmia.

Forgetfulness or lack of memory is perhaps more marked in sphenoid infection than in empyema of the other sinuses. This is due to the toxemia, and occurs in all sinus infections. There is also a peculiar feeling due to the swelling of the mucous membrane resulting in occlusion of the Eustachian canals. There is tenderness of the eyeball, which, if pressed upon, seems to the patient to be back of the eye. Fever, sleeplessness, and a decided malaise are generally present.

In giving you these few but important symptoms I have used the term infection or empyema. I wish to state that all of the symptoms we have enumerated, except the discharge, may be present in a nonaeration of the sinus, and we must not be too quick in eliminating a sinus involvement because we fail to find a discharge from the nose.

1928 CHESTNUT STREET.

A Broncholith and Pneumoconiotic Material Removed from a Bronchiectatic Cavity by Peroral Bronchoscopy*

By CHEVALIER JACKSON, M. D.,
Philadelphia,
Professor of Laryngology, Jefferson Medical College; Professor of Bronchoscopy and Esophagoscopy, University of Pennsylvania Graduate School of Medicine,
and
WILLIAM H. SPENCER, M. D.,
Philadelphia,
Instructor in Bronchoscopy and Esophagoscopy, University of Pennsylvania Graduate School of Medicine.

Lung stones have been reported occasionally in medical literature, in some instances being found postmortem, in other instances being spat up by the patient, followed in some cases by improvement in the patient's condition. The present case is the first in which the broncholith was removed by bronchoscopy. The removal has not been followed by any improvement in the patient's lung condition.

CASE I.—J. W., male, aged twenty years, referred for diagnostic bronchoscopy. His chief complaint was cough, periodic expectoration of greenish, foul sputum. His father, mother and one brother were living and well. There was no history of tuberculous, malignant, cardiac, or renal disease. The general health of the patient had always been poor. He stated that he had had very bad catarrh since birth. The tonsils and adenoids had been removed four times: last time in Europe. The patient had had innumerable intranasal operations. Both frontal sinuses had been opened when the patient was three years old. Four years ago he had fever for two months, for which ethmoids and sphenoid were operated upon. The antra were reported free from disease. The recent diagnosis was polypoid degeneration of middle turbinates. Ten days before polyps had been removed. The patient had had measles, mumps, and scarlatina, in early childhood, bronchopneumonia twice—in infancy and four years ago; arthritis in wrists and knees.

Present illness.—Has had a cough since infancy without sputum until four years ago. Shortness of breath—spasmodic at times. Four years ago began spitting up large amounts (one half to one pint) of greenish sputum which was sometimes offensive. Spat some blood during a pneumonia complicating influenza. Had never had a persistent fever. Many sputum examinations had been negative for tubercle bacilli. The patient had been gaining weight, had been to Colorado; felt better in a moderately moist climate. Radiographs had been made by many men in different cities, all of whom reported bronchiectasis and thickening; no history of aspirating or swallowing foreign body; appetite good; bowels regular.

Physical examination.—Thorax well formed; costal angle obtuse; expansion limited on the left side, most marked over the lower left; percussion impaired over the lower left lobe; breath sounds distant over the lower left lobe; loud rubbing friction sounds here heard. There were many loud bubbling râles on the left side of chest, most plainly heard over the lower left lobe; vocal fremitus and voice resonance increased over the left side. The heart was transposed; apex beat in the fifth right interspace nine cm. from midsternum; base of heart five and one half cm. from the midsternum in the second right interspace. Abdomen: Liver dulness on the left side; gastric tympany on right side, no rigidity or tenderness, no mass felt. The fingers were markedly clubbed; toes clubbed but less so than fingers.

Diagnosis.—Bronchiectasis of the lower left lobe. All viscera transposed.

Röntgen ray report by David R. Bowen.—There was in the first place a complete transposition, the heart bearing the same relation to the right side as it usually did to the left. The stomach was also on the right side. The arch of the aorta appeared to the right and the branching portion of the trachea to the left. The various organs appeared therefore to bear a normal relation to each other except as to the transposition.

---

*Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

The lung findings on the right side were practically negative but on the left there was considerable increase in density, but this was much more marked toward the base. Well to the base and to the median aspect, there was a well defined cavity, rough trefoil in shape, and, at the time of this examination, practically empty. It was readily observable in the fluoroscope. One of the loculi contained a small mass of sufficient density to be readily noticeable in the fluoroscope. I hoped that I might identify this as a foreign body, for my best judgment was that it was not improbable that this mass may have partly been responsible for the continuation of the condition. I was convinced that this condition was a purely local one. The greater portion of the right and all of the left were practically free from disease.

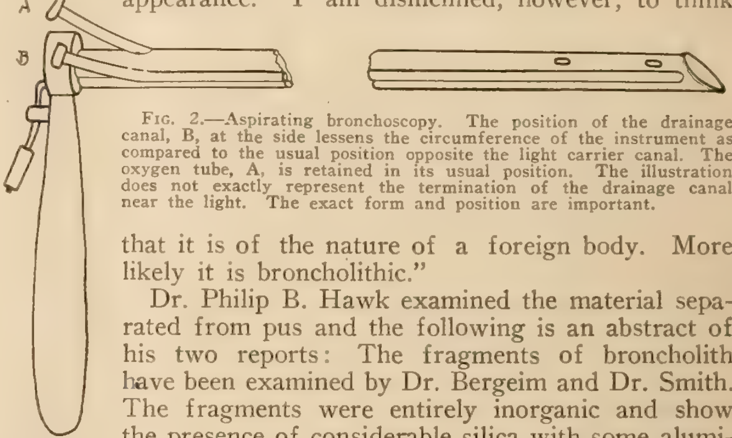


Fig. 2.—Aspirating bronchoscopy. The position of the drainage canal, B, at the side lessens the circumference of the instrument as compared to the usual position opposite the light carrier canal. The oxygen tube, A, is retained in its usual position. The illustration does not exactly represent the termination of the drainage canal near the light. The exact form and position are important.

FIRST BRONCHOSCOPY UNDER LOCAL ANESTHESIA.

Trachea and both main bronchial orifices were chronically inflamed. Pus came in considerable quantity from left bronchus. The left inferior lobe bronchus was much dilated, intensely inflamed, and its walls were more rigid than normal, as if thickened. The seven mm. bronchoscope went down to a depth of thirty-nine cm. from the upper teeth. Pus was coming from four different orifices. One orifice was very small and was dilated with forceps, liberating a quantity of foul pus. Sponge pumping removed a quantity of pus roughly estimated at about two ounces. There were three cavities that could be called abscess cavities; but pus was also coming from bronchi that were not far from normal size. A number of specimens of pus were removed from the abscess cavities without oral contamination. In one of the cavities there was a band stretching across which looked like a vessel. The bronchial orifices were not normal in size or position. The duration of the bronchoscopy was nineteen minutes, forty-two seconds.

Röntgen ray examination by David R. Bowen immediately after bronchoscopy: There was somewhat less density in the involved area than in the plates made yesterday. The densely opaque mass noted then was still seen in these plates. There was apparently no other difference.

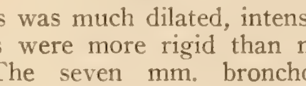


Fig. 1.—A, broncholith from bronchiectatic pus accumulation removed by peroral bronchoscopy under local anesthesia; B, inorganic material from same pus. The nucleus of the broncholith A was of similar character to that of the inorganic material B.

SECOND BRONCHOSCOPY UNDER LOCAL ANESTHESIA.

Three months later a second bronchoscopy revealed pus coming from the left inferior lobe bronchus. The opening into the cavity dilated at the first examination had not closed very much. The orifice was freely dilated and the interior of cavity wiped out with gauze bronchoscopic sponges. Small masses of crumbling material were noted. Granular gritty material was present in the pus.

Remarks appended to report of operation: "There was no sign of the gritty material at the first examination. The presumption is that it loosened after the first drainage of the abscess cavity. The nature of this material cannot be determined from gross appearance. I am disinclined, however, to think that it is of the nature of a foreign body. More likely it is broncholithic."

Dr. Philip B. Hawk examined the material separated from pus and the following is an abstract of his two reports: The fragments of broncholith have been examined by Dr. Bergeim and Dr. Smith. The fragments were entirely inorganic and show the presence of considerable silica with some aluminum and magnesium. They are, therefore, apparently a mixture of silica and silicate of the other elements. They contain no phosphate, carbonate or oxalate and only a trace of calcium, and cannot, therefore, be a concretion formed within the body. They seem to be a sort of pumice stone. (B, Fig. 1.) The rounded body (A, Fig. 1) is a true concretion in the sense that it has been coated within the body with calcium phosphate, for which it gives strongly positive tests. The nucleus appears microscopically to be of the same character as the larger bodies, that is, a sort of pumice.

COMMENT.

Vaccines were made by E. D. Funk from the pus removed from the abscess cavity, and were administered for a number of months. The patient's general condition remained fairly good, and he followed his occupation; but neither the vaccine treatment nor the removal of the broncholith and the inorganic material can be said to have appreciably ameliorated the bronchiectatic symptoms. Presumably the inorganic material found in the pus of the pulmonary abscess cavity was pneumoconiotic material liberated by suppurative liquefaction of the lung tissue. For the aspiration and washing out of pulmonary abscesses and bronchiectatic cavities the bronchoscope shown in Fig. 2 has the advantage of a drainage canal occupying the space at the side of the light canal, instead of opposite the light canal as required for esophagoscopy and as heretofore used in aspirating bronchoscopes. For ordinary bronchoscopy, especially in children, sponge pumping is a more rapid way of removing secretions, which are usually too thick for satisfactory aspiration through the small canal available in a bronchoscope small enough to enter the bronchi of very young children. In adults and in children over one year the combination of sponge pumping and the aspirating bronchoscope maintains a clear field with great saving of time.

1830 South Rittenhouse Square.

Traction Pulsion Diverticulum of the Esophagus*

By HUBERT ARROWSMITH, M. D.,
Brooklyn.

Zenker's definition of a traction diverticulum is one "in which the wall of the esophagus has been dragged outward by an exterior force." The first observation of such a condition was made by Rokitansky, and consequently it is sometimes referred to as Rokitansky's diverticulum. These diverticula have rarely been observed during life, Jackson having seen only one, and most authors state that they are without clinical importance and seldom give rise to any trouble. Kraus and Ridder, in their monograph on diseases of the mouth and esophagus (published by Alfred Holder, Vienna, 1913), take an opposite view, and assert that serious possibilities may result from them.

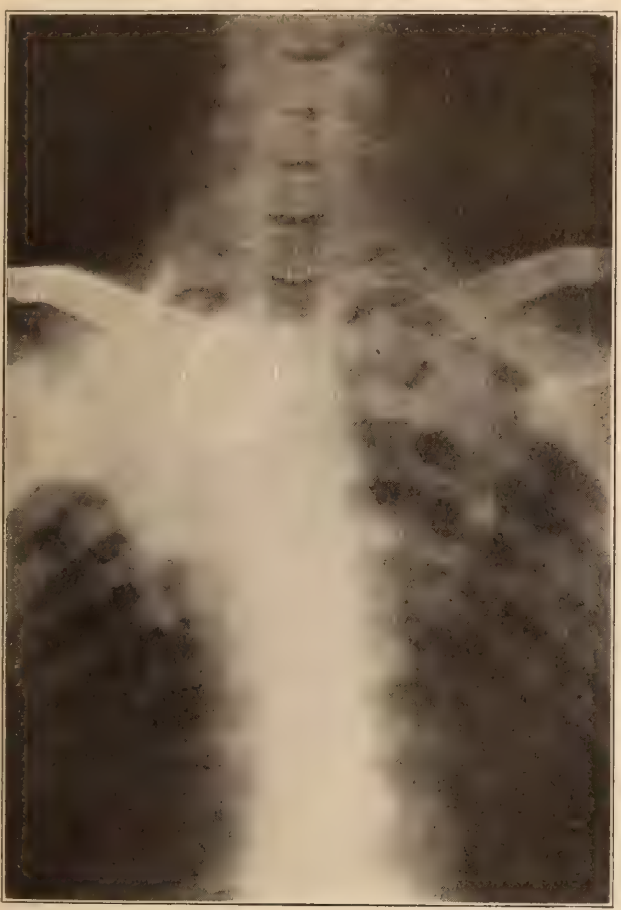


FIG. 1.—X ray photograph of traction-pulsion diverticulum, antero-posterior view.

Zenker stated that some mediastinal or intrathoracic inflammatory process, lymphadenitis, tuberculosis or cancer, pleurisy or pericarditis, must necessarily be the direct cause of these distortions; inflammatory adhesions taking place between the involved glands or new growth and the esophageal wall, and subsequent traction leading to the definite pouching. Bevermann found in sixty cases that seventy-three per cent. were due to tuberculous inflammation, other diseases of the lungs, pleura or pericardium, being responsible for the remainder.

These diverticula are encountered almost exclusively in the anterior or lateral walls of the esophagus, and most often about the tracheal bifurcation, often on the right side, and are usually funnel or tent shaped. They are commonly small, often multiple, the opening a long oval or slit, and they usually extend in an upward direction from the esophagus. The texture of the wall depends on the violence of the causative inflammatory process, and often the bottom of the pouch consists only of scar tissue, or perhaps a shrivelled lymphatic gland to which the diverticulum has adhered. The original inflammatory area forms a fixed point to which the esophageal wall is dragged.

The usual course is without symptoms; difficulty in swallowing is not likely to occur, and definite stricture of the esophagus has seldom been observed. Esophagoscopy alone can discover these pouches during life. As the pouch is directed upward, the bismuth meal will not be retained or perhaps even enter it, and consequently radiography will not show these ordinarily small offshoots. The potential danger in these diverticula exists in a proneness to perforation and the extrusion of food into the mediastinum, lung tissue, pleura pericardium, or atheromatous vessels; pneumopericardium may occur. According to some authors these diverticula may stand in direct etiological relation to carcinoma. Ritter draws an analogy between this possibility and the frequency with which malignant disease is found as a result of healed and scarred gastric ulcers.

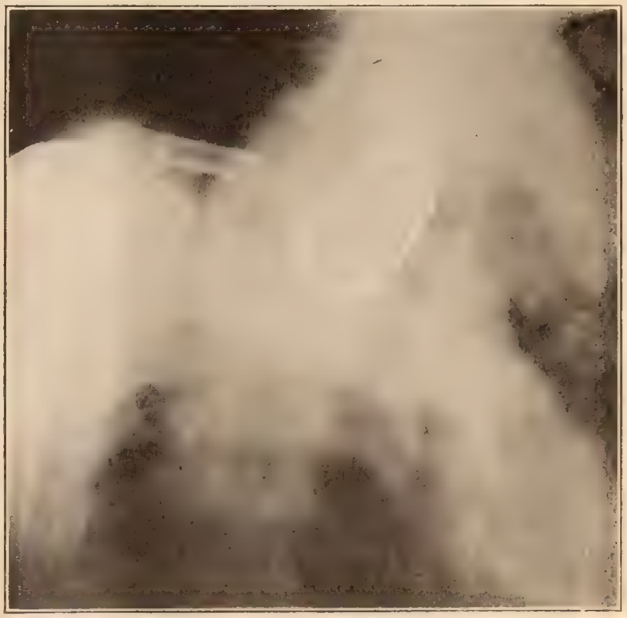


FIG. 2.—X ray photograph of traction-pulsion diverticulum, lateral view.

---

*Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

The following case, while not a typical traction diverticulum, might be called a traction pulsion diverticulum.

Case.—R. C., male, aged forty-seven, American. Admitted to Kings County Hospital November 4, 1919. Family history unknown. He had pleurisy twelve years ago, but recovered promptly, and was in good health up to the time of his present illness, which commenced a year ago with difficulty in swallowing. There was no hoarseness, no cough, very little expectoration. He had had no treatment, as he was merely slightly uncomfortable. Two weeks before admission he "caught cold," became hoarse, and had a severe cough, for which reasons he applied to the hospital. The difficulty in swallowing had greatly increased, and for this he sought treatment.

He had lost thirty pounds in weight since the onset of his sickness a year ago. Wassermann negative; sputum positive "1+." Physical examination: Right chest expanded much less than left, and the right shoulder appeared higher. Auscultation of left lung revealed nothing. Dullness over the right side and many whistling râles heard anteriorly and laterally, especially on inspiration. During his stay of two weeks at the hospital his temperature varied from 98° to 100°. An x ray was taken (Fig. 1). I saw him casually and appointed a time for esophagoscopic examination, but on the date set learned that he had been transferred to St. Anthony's Hospital as a case of tuberculosis.

On my next visit to that institution I esophagoscoped him, Dr. Lynah being present. It was impossible to introduce the esophagoscope under local anesthesia; ether was given, and even then the introduction was the most difficult I have ever attempted. All relations were distorted and practically nothing was recognizable. After considerable manipulation I entered the pouch, which was very large, as the radiograph shows. Once in, it was found distended, its walls relatively rigid, the mucous membrane thickened but apparently not acutely inflamed or ulcerated. No obvious scar tissue was seen. The perijacent structures were resistant to the feel. After prolonged search the esophageal lumen was discovered. It was very small, but it was finally dilated up to about seven mm. There was a fungating mass impinging on the lumen of the esophagus. Owing to my own illness I did not see him again, but since the first instrumentation he has been able to take nourishment in sufficient quantity to cause a gain of twelve pounds. He has been entirely afebrile, with no cough and slight expectoration.

170 Clinton Street.

The Report of a Case of Laryngocele*

By SAMUEL IGLAUER, B. S., M. D.,
Cincinnati, Ohio.

The occurrence in man of pathological air pouches connected with the larynx constitutes an unusual and interesting reversion to a primitive type. These air sacs are the analogues of similar structures, of unknown function, normally found in some of the anthropoid apes, such as the chimpanzee and the gorilla. Anatomically a laryngocele takes its origin from the ventricle of Morgagni and represents a distention or enlargement of the appendix of the ventricle. The sac is lined with mucous membrane continuous with that of the larynx. The laryngocele usually makes its way through a small opening or dehiscence in the lateral portion of the thyrohyoid membrane and appears as an intermittent swelling in the side of the neck. Very rarely, as a distinct entity, or in combination with this extralaryngeal sac there may also be an intralaryngeal pouch, appearing under the false vocal cord and extending into the lumen of the larynx. This intralaryngeal pouch is of great importance, since, when inflated, it may seriously interfere with both phonation and respiration.

Although these pouches, or at least their beginnings, are present at birth, they may not become manifest until later in life, usually as a result of a single violent or frequently expiratory effort, as in crying, coughing, straining or in the blowing of wind instruments and the like. As time goes on frequent ballooning of the sac may cause it to become so greatly enlarged that operative interference may become necessary. Infection within the sac also demands operation. Laryngocele is usually limited to one side, but bilateral cases have been reported.

Aerocele constitutes one of the rarest of all laryngeal conditions. According to Reich (1) up to the year 1914, but twenty-one authentic cases had been recorded. An additional case has been reported by Reich, one by Schambaugh and Lewis (2) and one by Pluyette (3).

REPORT OF CASE.

Case.—The following case presents many of the typical features of this condition: The patient, B. S., male, aged five and a half years, was first seen by me when he was three and a half years of age. His mother stated that when he was nine months old she noticed that whenever he cried and threw his head back a small lump, like a soft rubber ball, would appear alongside of the larynx, in the right side of the neck. At first it had the size of a hazel nut, but in a few weeks grew larger until at the age of three and a half years it had attained the size of a hen's egg. The swelling was scarcely visible when the child was quiet. There was no history of any disease such as whooping cough, which might have accounted for the appearance of the tumor. February, 1920, when the patient was in repose, no swelling was visible in the neck (Fig. 1), but when the patient made a forced expiratory effort as in crying or blowing, a tumor immediately appeared in the right anterior cervical triangle and extended vertically from the cricoid cartilage almost to the clavicle. Laterally it disappeared under the anterior border of the sternocleido muscle. The swelling was about the size of a hen's egg (Fig. 2) and had a smooth, rounded contour. It was of soft, elastic, cushionlike consistency and was slightly tympanitic to percussion. It disappeared immediately when the patient was in repose (deflation). Ordinarily the neck measured nine and three quarter inches in circumference, but during inflation the circumference was eleven and three quarter inches.

---

*Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920. The subject of this report was demonstrated before the Middle Section of the American Laryngological, Rhinological and Otological Society, in February, 1920.

During repose a profile röntgenogram showed a normal neck picture, but during forced expiration (inflation) the hyoid bone was pushed forward from the vertebral column for about half an inch, and a roughly triangular air space, with its apex upward, appeared between the inner wall of the larynx and the posterior wall of the oropharynx and hypopharynx, at the same time giving a slightly convex twist of the trachea. The patient was free from pain, dysphagia, aphonia or dyspnea.

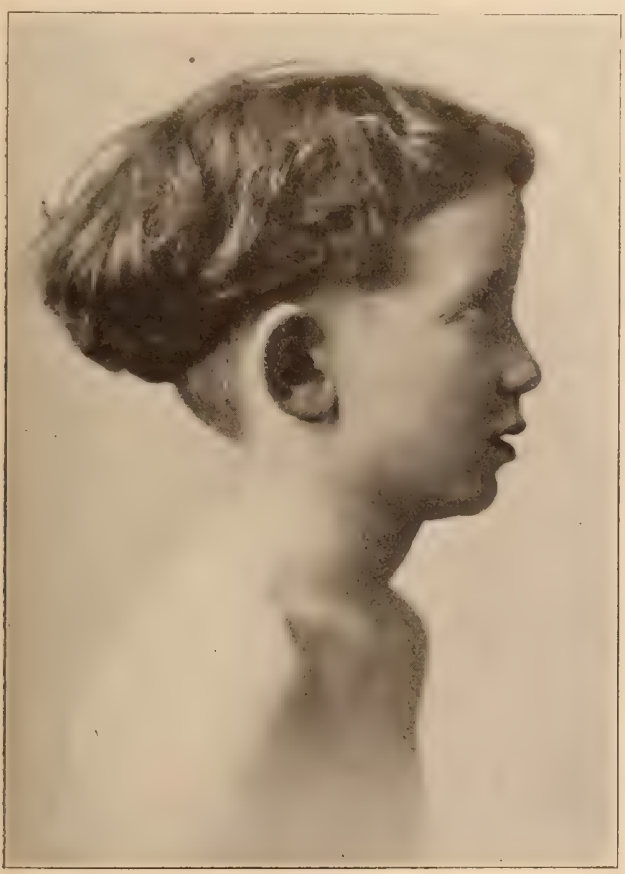


Fig. 1.—Child in repose.

The diagnosis of laryngocele was made from a history of the case, from the presence of an elastic disappearing tumor in the neck, and was confirmed by the röntgenogram, by the aspiration of air, and by puncture of the sac, with the escape of air either externally or into the aspirating syringe. Laryngoscopic examination may reveal the presence of an intralaryngeal aerocele.

No treatment was deemed necessary. Surgical intervention is indicated in these cases only for the relief of aphonia or dyspnea (or infection within the sac) and consists in free exposure and excision of the aerocele with suture of the opening where the sac emerges from the air passage. Lateral thyrotomy may be necessary for the removal of an intralaryngeal aerocele.

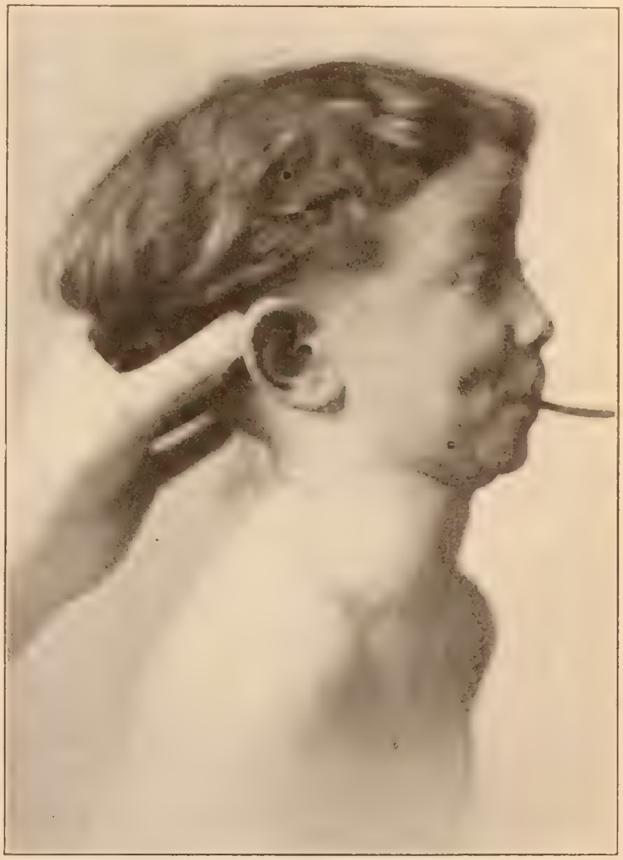


Fig. 2.—The appearance of the air sac in the neck when the patient made a forced expiratory effort.

REFERENCES.

1. Reich, A.: *Beitr. z. Klin. Chir.*, Bd. xc, p. 619, 1914.
2. Schambaugh and Lewis.
3. Pluyette: Un cas de tracheole, *Marseille Medical*, May 1, 1917, p. 552.
4. v. Hippel: *Zeitsch. f. Chir.*, Bd. cvii, pp. 477, 1910.

Thoracoplasty in Tuberculosis.—P. Ball (*Lancet*, October 16, 1920) describes (with diagrams) thirty-seven operations in pulmonary tuberculosis patients, of whom four died after operation and fifteen were cured. The author indicates the operation in unilateral pulmonary tuberculosis, other rational treatment failing. Resection of the ribs is carried out under local anesthesia through paravertebral incision, to facilitate removal of the posterior part of the ribs from the first to the eleventh, or tenth, at least.

Diseased Tonsils as a Factor in Focal Infection*

By HARRY RODMAN, M. D.,
New York.

Attending Otolaryngologist to Hospital for Joint Diseases, Surgeon to Bronx Eye and Ear Infirmary.

Since publishing my last paper on the subject of focal infection and its relation to tonsillar disease, I am more convinced than ever of the very important rôle which these organs play as a causative factor in the production of local and systemic disease. At that time I related the histories of a dozen patients suffering from infectious arthritis, whose tonsils I had removed, and all of whom had been greatly benefited by the operation. Many articles have been written since then, substantiating practically all that I had said concerning the close relationship of diseased tonsils to joint diseases and other pathological conditions.

In the orthopedic institution with which I am affiliated I can safely say that we are better equipped, or at least as well equipped, as any such institution in the country, to study the etiology of bone and joint diseases, as we have every branch of medicine covered by having special departments, such as dental, rectal, genitourinary, nose and throat, eye, gynecological, and others, to make as complete an examination as possible. A patient who comes to our hospital with a joint lesion, for example, is sent through the various departments for a complete examination, including blood, urine and x ray, so that we are able in the great majority of our cases to arrive at some definite conclusion. Indeed, the results after removing the focus are so startling that many physicians have come to regard all localized lesions as being the seat of focal infection, and if we can isolate the focus we may cure our patient. A disturbing factor in the prognosis of the ailment, however, is the presence of secondary foci, and although the primary focus is removed, the patient is not benefited as he should be.

Infection of the tonsils, as we all know, is frequently the cause of diseased conditions, such as arthritis, acute rheumatic fever, nephritis, endocarditis, adenitis, goitre, chronic coughs, colds, and a large group of nervous disorders commonly classed as neurasthenia. It would not be amiss while on this topic to dwell on the principles involved in focal infection as related to tonsillar disease.

The tonsils are still regarded by a few of our colleagues as having a function to perform. It is asserted by them that the tonsils act as guardsmen of the respiratory tract—that they tend to gather the benign and pathogenic bacteria into their crypts and produce a secretion which destroys them, and the capsule, which is tough, prevents these bacteria and their products from passing into the system.

Now the great majority of us, not alone laryngologists but many observers engaged in research work, and who have studied this subject scientifically and not theoretically, believe it possible that these glands had a protecting influence in the past ages of mankind, but that, due to our present mode of living and our environment, these organs have lost any protecting agency they may have possessed, and that, instead of protecting the individual from disease, they invite disease and become readily infected. The crypts become dilated easily; they fill up with cheesy and bacterial products which cannot drain away, making them a splendid breeding place for the propagation of toxins to the detriment of the patient.

The tonsils may easily become infected, as they are situated most favorably for the entrance of bacteria and in a region where myriads of disease producing microorganisms abide. The bacteria from the crypts of the tonsils break through the capsule and thereby gain entrance to the general circulation through the blood stream and the lymph channels. We know that the bacteria and their products have a tendency to invade the least resistant tissues of the body, and as the circulation in the joints is poor, compared with other regions of the body, they readily become the seat of infection. On the other hand, where we have an inherited tendency to nephritis, or endocarditis, or to former diseases of childhood or of adult life, having a tendency to weaken certain structures, these structures will be affected accordingly.

There are always two factors to be considered, viz., the virulence of the bacteria and the resistance of the individual. These will explain why, when the tonsil is filled with pathogenic bacteria, the patient will often remain free from disease. Under certain conditions, however, the bacteria which have remained dormant become active, or the resistance of the individual becomes lessened.

We have learned in the last few years of the selective action of bacteria; that certain groups attack certain localities of the body; that, in injecting certain streptococcic groups found in a particular joint, we can produce the same kind of a joint lesion and on the same side of the body. This is a very fascinating subject, but I wish to make this as practical a paper on the subject as I can.

The pathologist in our hospital, in the majority of the diseased tonsils which he examined, found mainly three groups of organisms: Streptococci viridans, hemolyticus, and a gram negative diplococcus. Occasionally secondary infections, such as syphilis or sarcoma, occur in the tonsils.

What I wish to emphasize is not the kind of bacteria or the manner in which they are carried, but that the absorption of chemical toxins from the organisms found in the diseased tonsil is capable of producing serious lesions in the nervous system, in the heart, in the kidneys, blood, respiratory tract, and in the joints. These symptoms or sequellæ may be so serious that life is endangered. Improvement and cures have followed the removal of foci of infection in numerous patients who had previously resorted to every known means of treatment.

---

*Read before the Clinical Society of the Hospital for Joint Diseases, December 14, 1920.

In advising the removal of tonsils we not only protect the individual on whom the operation is performed, but also eliminate a source of infection to others as carriers. Even though the patient may show no further evidence of infection, if his tonsils harbor the bacterial groups he may communicate disease to others, and we therefore advise enucleation of his tonsils as the only radical method of eliminating them as carriers of disease producing bacteria.

Another argument in favor of removing diseased tonsils is that in the thousands of tonsillectomies that have been performed, the subsequent history of these patients prove that they are more immune to disease, and that in the case of children when attacked by disease the infections run a less severe and protracted course with fewer complications, particularly in scarlet fever, measles, diphtheria, and anterior poliomyelitis, than in those children who have not had their tonsils removed, thus proving how useless these organs must be in protecting the human economy and especially diseases involving the throat.

Having tried to demonstrate the close relationship of diseased tonsils to local and systemic disease, I shall follow this up and give you a résumé of the practical results obtained after tonsil enucleation in patients suffering from infectious arthritis in our hospital.

Out of a total of 150 patients upon whom I have operated in a little over a year as a prophylactic measure, about half of them had been suffering from hypertrophied tonsils, which caused mouth breathing, with irritating coughs and, in hospital patients having infantile paralysis, tuberculous joints, and other conditions. Seventy-five of the patients were attacked principally by infectious arthritis of one or more joints, due, in my opinion, to pathological tonsils, as all other foci had been eliminated as far as possible. Many of the tonsils in these cases at the time of operation were found to contain cheesy secretions, and pathological examination demonstrated presence of pathogenic bacteria.

Of the patients operated upon I can safely say eighty per cent. were greatly benefited by the operation, and many were cured. About twenty per cent. were unimproved, due, no doubt, to a secondary foci elsewhere in the body. After degenerative changes have taken place in a joint, removal of the focus will not bring back a normal joint, but, in my opinion, the relief of pain in that joint will allow the patient greater freedom of action, thus creating a useful limb in time after active and passive motion.

Out of this series I shall give the following histories as illustrating the type of cases we had to deal with:

Case I.—P. B., aged one and a half years. No history of tuberculosis; Wassermann negative. The family history was negative. Admitted to the hospital September 30, 1919. The child began to walk at thirteen months. Seven weeks before admission to the hospital, the mother noticed that the child was dragging her left leg. The family physician noted the child's condition as growing rapidly worse. The child would cry with pain at the least movement of her limbs, active or passive. The patient was referred to the New York Orthopedic Hospital, where tonsillectomy was advised. As they do not perform these operations there, the patient, having been seen by Dr. Harry Finkelstein, was admitted to our institution and put under treatment. On admission all the joints were found swollen and extremely sensitive to pain, so that the patient was in more or less discomfort and suffering constantly, also considerable limitation of motion. On examination her tonsils were found to be full of purulent secretion. Operation was advised, which I performed December 17, 1919. A vaccine was made of the Streptococcus hemolyticus found in the tonsils, but the patient showed such a wonderful improvement in so short a time, the pain disappearing soon after operation, that the vaccine was not needed, and the child was able to move her limbs and walk without difficulty. The results in this case were the most typical and satisfactory I have had, and are a practical demonstration of diseased tonsils causing infection of the joints and remedied by operation.

Case II.—D. G., aged twenty-two. The previous history was negative. The patient was admitted to the hospital June 14, 1920. The patient had never been sick until six months before, when a severe attack of tonsillitis occurred, followed by an infectious arthritis of the right knee. Three months after that a similar condition appeared in the left knee joint. Seven weeks ago the hands, elbows, shoulder joints, all became involved.

Physical examination of her throat revealed diseased tonsils and a nasopharyngitis. June 4, 1920, tonsillectomy was performed under general anesthesia. Two weeks later, improvement began to take place. Within two months all symptoms had disappeared and the patient considered cured. A distinct relationship was established between the tonsil and joint disease.

Case III.—A. S., aged twenty-two. Was admitted to the hospital July 11, 1919, with the following history:

She had been a patient in our hospital during July, 1916, with a history then of having suffered frequently from sore throat. Eight years before that she had her first attack of socalled articular rheumatism. The knees, ankles, elbows, wrists, were all affected. The patient stayed in bed three weeks, after which she was somewhat improved. This attack was followed by a severe attack of pain in nearly all of her joints, this time complicated with a systemic condition, viz., endocarditis (a typical picture of local and general infection due to diseased tonsils). An examination of her blood, however, revealed no pathogenic bacteria. Her physician, Dr. Gurtov, then advised her to take hospital treatment, and referred her to our hospital, and she was admitted in July, 1916. At that time physical examination revealed large joints, swollen and tender. Her tonsils were visibly diseased. She was put to bed and discharged from the hospital showing some improvement. Tonsillectomy, although indicated, was not advised, as it was considered too dangerous. She was told to return for further observation, and was readmitted July 11, 1919, having had a severe exacerbation of all her previous symptoms. I then decided to remove her tonsils, telling her of the greater risk to her general health than the risk of the operation, which I performed under local anesthesia July 11, 1919. She improved almost immediately. In my judgment this was remarkable, that quite a number of such patients showed such rapid results. The swelling and tenderness disappeared within a short space of time, and she remained practically well up to the present day, almost a year and a half after the operation. This was a typical case of infectious arthritis due to pathogenic tonsils.

226 West Seventy-second Street.

Endocrine Gland Extracts

Their Manufacture and Use

By SPENCER G. STRAUSS, A. B., M. D.,
New York.

(Concluded from page 397.)

Presuming that this is true, that most of the changes brought about are purely qualitative, it is fair to conclude that there is little need of large quantitative dosing. As is known, there is a tendency of late throughout all therapeutic work toward smaller and smaller doses, and it has been my experience in the therapeutics of endocrine extracts to obtain brilliant results after a single minimal dose. Interestingly, that same individual may show no reaction to a subsequent similar dose. E. A. Schäfer (7) states that "Others have obtained different results, and state, although in dogs small doses of extract from an exophthalmic goitre may cause increased rate of heart beat and some rise of blood pressure, this is soon followed by the opposite condition. They therefore hold that the symptoms are produced, not by excess of normal thyroid secretion circulating in the blood, but as the result of the production of a perverted secretion (dysthyroidism)."

Every individual is an individual unto himself alone, endocrinologically. It seems to me to be a sad commentary upon the fairmindedness of physicians when they insist that only those methods which have the seal of official approval may be ethically included in their armamentarium, so let us not limit ourselves to one grain or two grains and so on, as the case may be, but in the first place attempt to obtain a purely qualitative reaction.

We know from chemistry that many chemical reactions are much influenced by the presence of substances which do not themselves seem to take a part in the reaction and are left apparently unchanged after it has ceased. This is known as the phenomenon of catalysis. These catalytic agents may either increase or retard chemical action. In all probability some of the physiological expressions of endocrine activity are due to the possible catalytic nature of these ferments, inasmuch as this catalytic attribute does not depend on quantitative factors let us prescribe accordingly. Begin with a dose approximating one millionth of a grain, a dose so small as this, strange as it may seem, should not be given more frequent than every few days. If after a trial or two no reaction is noted, use a thousandth of a grain in the same way; from a thousandth of a grain ascend quantitatively to a hundredth of a grain, a tenth of a grain, a half a grain, and one grain, and up. The greater the quantity the more frequent may be the administration. I always begin with infinitesimal doses because, from my experience, such doses have no effect when their administration follows that of the large material doses, in all probability because of the presence of antibodies in the blood stream. Possibly, if endocrine extracts from the human species could be obtained, such antibodies would not be formed, so we must always remember that, no matter how careful the preparation has been, we are introducing into the system a foreign protein. Infinitesimal doses probably act through homostimulation of the similar human gland, whereas a large material dose, while it may act in a similar way, must also cause a decided disturbance of the remaining glands of the individual's endocrine chain by suddenly throwing into the blood stream such an unusual amount of a particular gland enzyme. Between doses wait until the patient's reaction is completed. It is poor practice to increase dose quantity and frequency because good results are obtained from small doses. Small doses act differently than do the large.

There are reasons to believe that in any therapeutic procedure the infinitesimal dose and the material dose have reverse effects, to wit: opium, which in material doses causes constipation, while in infinitesimal doses often causes intestinal evacuation, and while this latter reaction may be brought about only through the relaxation of an intestinal spasm, the fact, however, remains that you have obtained reverse effects by a quantitative variation of the dose alone, no matter how logical the explanation may seem. The entire school of homeopathy is founded on a presumption of this kind; another similar example is the therapeutic use of tuberculin in the treatment of tuberculosis. Finally, in the light of our ever increasing knowledge of the various anaphylactic phenomena, we no longer can deny the fact that massive changes may be caused by the introduction of minute quantities of certain foreign proteids. In this connection we again find in the last mentioned volume on pages 68-69 "Trendelenburg estimated the amount of adrenalin in the blood of the suprarenal vein of a cat, and found that on the average .003 mg. was passed out of the two organs each minute. From the data thus obtained he reckons that about five mg. to the kilo body weight is formed in twenty-four hours. After draining off a large quantity of blood and thus causing a considerable fall of blood pressure, the amount of adrenalin passed a minute was not increased. G. N. Stewart states that massage of the suprarenals leads to the passage of an increased quantity of adrenalin into the blood. When the massage is light a depressor effect is cause, when vigorous a pressure effect, but, according to Hoskins and McClure, there is never so large a pressor effect as with ordinary therapeutic dosage. Hoskins and Rowley find that administration of adrenalin does not increase the excitability of the vasomotor nerves to faradization, but rather tends to depress it. With regard to the amount of adrenalin required to produce a physiological effect upon plain muscle, it may be mentioned that Cannon obtained inhibition of a strip of intestinal muscle with a solution containing one in twenty millions, and Janeway and Park observed inhibition of a strip of coronary artery of the sheep with a solution of one in fifty millions."

In treating your patient it is always essential to attempt to determine which gland is essentially to blame from the clinical picture presented by the patient, and that particular gland is used as the therapeutic basis. It should, however, be remembered that these disturbances cannot ever possibly be monoglandular and a determination must be made by the clinician of the other weak spots in the endocrine chain. In this connection a résumé of the patient's symptoms must be made at every visit because even though, for example, an indication for ovarian help may be present at the first examination of an individual who is essentially disthyroidal, such ovarian disbalance may be partly or entirely overcome by the administration of the original thyroidal medication.

For routine use, small doses of thyroidal extract, even though the diagnosis seems to place the chief blame in another direction, may prove of great value in uncovering certain unsuspected clinical manifestations, because it is probable that the thyroid gland occupies a hub position in the endocrine chain, may help reveal the weak spots more clearly. At the present time this initial thyroid feeling is used in the attempt to discover cases which are known as slightly hyperthyroidal. Of course this may be of some value, but personally I believe that in those cases which are actually hyperthyroidal the introduction into his system of such an initial dose does him an actual great harm, and further even though a positive result is obtained, there are some cases which, although they give a positive reaction to such a test, are not basically hyperthyroidal at all, as the tests would make the observer believe, but the overactivity of the thyroid gland is either relative or compensatory. In both of these groups a successful therapeutic result can only be obtained by correction of the outlying glands which in their disorder have caused only an apparent overactivity of the thyroid gland.

After the clinician determines which gland is essentially to blame, and if the difficulty seems to be a purely functional one, correction should be begun with infinitesimal doses, at intervals, as before described. These doses are to be increased quantitatively, and parallel with the quantitative increase should be an increase in the dose frequency. In this connection it is interesting to recall that the equivalent of one millionth of a grain is to be found in the ordinary 6× potency homeopathic tablet, one thousandth of a grain in the 3× potency, one tenth of a grain in the 1× potency. It must always be remembered that when the desired result is obtained, therapy must cease immediately and entirely. This I have pointed out in an earlier article (8).

Finally, although it is being more and more freely admitted that an individual's endocrine tonus determines to a very large extent both his psychic and physical life, one must be ever cautious in the therapeutic application of this knowledge and always remember that this entire field is still in the very early stages of its development.

SUMMARY.

Two points I wish to emphasize again:

1. Let the manufacturers announce the exact nature of their products in all its detail so that therapeutic results may be better understood and thereby stabilized.

2. Let the physician be more willing to relinquish his very old and routine administration habits and adopt a more open mind in the use of these delicate endocrine extracts.

Let me express my appreciation of the courtesy shown me by the following gentlemen in their willing cooperation with me in the preparation of this paper: Dr. Eugene Hall and Dr. Waldecker, Mr. H. E. Haines, Mr. David Klein, Mr. C. S. Oakman, Mr. H. A. B. Dunning, Mr. Henry T. Perry, of New York.

REFERENCES.

1. Roth, G. B.: Pituitary Standardization, United States Public Health Service, *Hygienic Laboratory Bulletin* No. 109, December, 1916.

2. Spaeth, R. A.: The Standardization of Pituitary Extracts, United States Public Health Service, *Hygienic Laboratory Bulletin* No. 115, October, 1918.

3. Tatum, A. L.: Study of the Distribution of Iodine Between Cells and Colloid in the Thyroid Gland, *University of Chicago Laboratory Bulletin*, 1920.

4. Fenger, F.: On the Presence of Active Principles on the Thyroid and Suprarenal Glands Before and After Birth, *Journal of Biological Chemistry*, vol. xi and xii, June and July, 1912.

5. Janney and Henderson: Concerning the Diagnosis and Treatment of Hypothyroidism, *Archives of Internal Medicine*, vol. xxvi, September, 1920.

6. Harrower, H. R.: *Practical Organotherapy*, p. 29, The Harrower Laboratory, 1920.

7. Schäfer, E. A.: *The Endocrine Organs*, p. 39, Longmans, Green & Co., 1916.

8. Strauss, S. G.: Thyroidal Constipation, New York Medical Journal, February 14, 1920.

46 East Seventy-fifth Street.

Editorial Articles

OPERATIONS ON TONSILS AND ADENOIDS IN OUTDOOR CLINICS IN ENGLAND

A considerable amount of discussion has taken place recently in the British medical press concerning the risks and complications of operations on tonsils and adenoids when performed in outdoor clinics. To appreciate the extent of the problems involved one has to realize that affections of the upper respiratory tract are relatively more common in England than in this country; no doubt peculiarities of the English climate have to bear a large share of responsibility for this state of affairs. On the other hand, hospitals find it impossible to provide more than a mere fraction of the number of beds that would be required to accommodate all cases in need of operation. Furthermore, it must be remembered that city owned hospitals hardly exist in England. These institutions are supported by charity; and, while voluntary contributions have not as a rule kept pace with the increase in working expenses, all hospital authorities insist on remaining independent of official control. As a result, but few institutions are able to plan extensions to meet increasing needs of the districts they serve.

The rate supported poor law infirmaries serve totally different purposes and thus cannot assist the solution of the present problem. Another annoying feature is the complete lack of ward accommodation for patients belonging to the middle classes. For them the cost of an operation at a nursing home, or even in their own home, is often prohibitive, while charitable institutions reserve their services for the poor section of the community exclusively. In other words, the provision of beds and medical service at low rates, which is a familiar feature of institutions in this country, has been almost completely neglected in England. A notable step to remedy this defect has been taken by the city of Bradford with results said to be satisfactory both to the public and to local medical practitioners.

Under such conditions the vast majority of children have to be operated on as outpatients. It has been pointed out that they are exposed to unnecessary risks before, during, and after operation, while inpatients are prepared carefully by the trained nursing staff, all preoperative measures have to be intrusted to the unfortunate outpatient's mother; only rarely the help of an overworked municipal nurse can be obtained. It is at this stage of the proceedings that misguided affection so often proves stronger than scientific reasoning and detailed printed instructions. But too frequently the little patient appears at the operating table fortified for the ordeal by a meal, often of strange composition and surprising quantity.

The choice of anesthetic is likely to be determined rather by pressure of time than individual considerations. Finally, after the operation is over, outpatient clinics can offer but short hospitality to their patients for recovery. Several surgeons have described the horrors of the recovery room and of the early street car or train journey home.

Results obtained by such arrangements have been compared with records of inpatients at Bristol Royal Infirmary. Mr. E. Watson-Williams showed in an article published in the *British Medical Journal* of December 11, 1920, that the morbidity among children operated upon in the outpatient department of the infirmary was more than four times as great as among inpatients. Classing as morbid all cases where definite complications occurred, Mr. Watson-Williams had ten cases of morbidity among 239 outpatients, and one death, traced directly to septic infection after operation for tonsils and adenoids; while, on the other hand, there occurred only one instance of definite morbidity among a hundred inpatients. These figures gain in significance, when it is realized that only children of poor physique, or those otherwise handicapped could be admitted as inpatients. The reverse applies to outpatients; no sickly child nor one living at any distance from the hospital was accepted for operation.

Further precautionary measures taken included the distribution of printed instructions to parents describing in detail what they were expected to do before and after operation; further, the children were carefully inspected before they were permitted to leave for their homes and warm wraps were secured for them. They were also ordered to reappear for examination on the fifth and twelfth days afterward, and antiseptic lozenges were provided. This description may be considered to give a typical picture of the state of affairs at clinics in all parts of Great Britain. All efforts to remedy conditions have been hampered by lack of adequate funds. In the meantime surgeons will have to continue their work, for operation will usually be the lesser evil.

The present discussion is vested with a special topical interest. The State is ever extending its control over medical practice. Now, the Ministry of Health, through officers of the medical school service and through its medical officers of health, insists that children requiring removal of tonsils and adenoids shall be operated upon. Naturally, therefore, it is argued that, if the State urges operation, it must also undertake to provide facilities for treatment, inferior in no way to the best obtainable, to such parents who cannot themselves bear the necessary expenses. Important and intricate problems like these will no doubt arise frequently in the course of the further development of State medical service, and discretion and adaptability will have to be exercised by all concerned before the high ideals aspired to, can be attained.

PROGRESS IN CANCER RESEARCH AND TREATMENT

During the past year new theories as to the causation or rather the origin of cancer have been advanced. For example in the December issue of the *Prescriber,* an abstract was given of a communication by Dr. A. Paine, who considers the disease to be due not to a specific parasite, but to a disordered growth of epithelium caused by various irritants. In accordance with this point of view, degeneration of the nobler parts of the cell is the result of damage to its structure, which is followed by metabolism and persistent overgrowth. Dr. I. C. Clare in the *Lancet,* December 25, 1920, agrees in the main with this theory although he differs as to the cause of the degeneration of the cell. In his opinion this is not brought about directly by inflammation or other forms of irritation, but is rather the result of an effort to respond to the destructive effect of inflammation prolonged beyond the regenerative powers of the tissue. However, this power is not unlimited, and varies in different tissues according to their normal necessities and in different individuals in corresponding tissues.

Dr. U. G. Webb, in the *Practitioner,* November, 1920, brings forward the theory that cancer is a new growth due to preexisting embryo cells being stimulated into abnormal development by conjugation with ova, or sperm cells of other animals accidentally introduced, that such animals are probably invertebrates, and possibly of more than one kind. This may be expressed in fewer words by saying, that cancer is a hybrid between a human cell and one of a lower order. He further points out that a fertilizer as well as suitable soil is necessary. For instance, cancer of the cervix uteri is rare in virgins, the soil is unsuitable and he suggests that access for a fertilizer is easy. Ova and sperm cells can reach the respiratory and digestive tracts without difficulty. Ova deposited about the vulva might easily be conveyed to the uterus during coitus, or even by a vaginal syringe. Access to the mammary gland could be had either through the lacteal ducts or those of the glandulæ lactiferæ aberrantes. Dr. R. M. McCarrison, who has made a great reputation by the investigation of the causation of goitre and other forms of thyroid disease, in the course of experiments on the effect on monkeys of food deficient in vitamine he found a carcinoma developed in one of the animals which to all appearances was absent when this particular diet was begun. He therefore suggests the possibility of a connection between cancer and the absence of this food product.

So far as treatment is concerned, perhaps the general view of authorities on the subject is largely in agreement with the majority of those who took part in a discussion on cancer research at the meeting of the British Medical Association at Cambridge in June last and which was commented on in our report of that meeting. That is, treatment, as far as is known, should consist of a judicious combination of surgery and irradiation. It may be said that while there are a few forms of malignant disease which appear to be amenable to treatment by irradiation, as a rule this treatment shows its best effects in combination with surgery. Mesothorium has been used with some success, according to Carnot and Guillaume, as stated in the *Prescriber,* April, 1920. When injected, this drug appeared to relieve the condition in several cases of inoperable cancer. Of all the drugs tried recently preparations of copper seem, perhaps, to hold out the greatest promise. The use of trypsin has been revived it is said with a certain measure of success.

A review of the progress in cancer treatment would be quite incomplete without referring to the rôle of radium needles in treatment. Dr. C. Regaud in the *Paris Médical,* February 7, 1920, gives a description of his method of radium puncture, which consists of the implantation of needles charged with radium, while he says that the time is too short to speak of cures, at the same time, there have occurred at least temporary remissions in the cases, all of which were inoperable. Dr. Regaud looks upon the method as marking a forward step in the treatment of malignant growths, and one affording great possibilities. At the last meeting of the American Therapeutic Association, Dr. William L. Clark described his early experiments in attempting to devise radium needles that would be suitable for the treatment of malignant disease. The needles in malignant disease did not cause necrosis and sloughing unless the exposure was too prolonged. Unless the tissue was very much devitalized the needles could be left in for twenty-four hours without causing sloughing. The use of the needles had made many things possible which were not possible without their use. It was impossible to remove successfully malignant growths from the mouth and metastatic glands of the neck because of the migratory cells, but the needle might be inserted right into the gland which was absorbed, inhibited, retrogressed and disappeared. It appears from the experience of Dr. Clark that in the treatment of malignant disease radium needles will have a fairly wide range.

PHYSICIAN AUTHORS: DR. TOBIAS GEORGE SMOLLETT

Dr. Tobias George Smollett is a horrible example of the fate that overtakes those unlucky physicians who are so unfortunate as to lack a "good bedside manner." At least, that was Smollett's own view of the matter, and surely he was well qualified to know. He was one of the most conspicuous failures the medical profession ever had, and if ever a physician lacked the "good bedside manner," he was that physician. Of what avail were eminent scientific qualifications—which his biographers assure us he possessed—against an irascible temper which worked twenty-four hours a day and played no favorites? Of what use was superior ability in the pursuit of the great god Success when a man was given to stinging right and left on the slightest provocation? No wonder that Smollett's skill was as useless as a clock without wheels. According to the old saw, talent is something but tact is everything, and Smollett was a living proof of the truth of it. There was not a jot or tittle of tact in his whole system. And this is a fatal defect, not only among physicians but all others as well. One doesn't have to read many pages of Smollett's writings to discover the fact that he was far from having a sweet disposition. He was as brutally frank in his speech as he was in his writings. A physician, he tells us, (in *The Adventures of Ferdinand, Count Fathom*) must ingratiate himself with apothecaries and ladies' maids—as well as with the ladies themselves. But Smollett ingratiated himself with nobody. It was his habit to antagonize everybody. And so, where others of lesser qualifications were eminent successes, he was an absolute failure. Certainly it pays to keep a civil tongue in one's head.

Despite his lack of medical success, Smollett clung to his profession with grim determination long after he had become a success as a novelist. It is noteworthy, too, that throughout his life medical men were his chief, almost his sole, cronies—this despite his bitter attacks on the whole medical profession, in print and otherwise, assailing individual members of the profession in pamphlets, holding them up to ridicule in his novels, calling all doctors quacks and fools. Notwithstanding all this, his closest friends were doctors. Dr. John Moore, famous as the author of *Zeluco,* the novel which inspired Byron's *Childe Harold,* was his confidante and biographer and traveled with him extensively. Smollett never was a member of a literary circle. As a rule he kept himself aloof from the writing fraternity, whom he flayed as mercilessly as he did the doctors. His intimates to the end of his days were the men who had succeeded in the profession where he had failed.

It was not until 1753 that Smollett definitely gave up medicine. The *Adventures of Roderick Random* had appeared in 1748 and *The Adventures of Peregrine Pickle* in 1751. These two novels, with *The Expedition of Humphrey Clinker,* which did not appear until the year of his death (1771), are the three living products of his vast literary output. Of course, he left the profession in a blaze of anger with a pamphlet on *The External Use of Water* as his valedictory. He had gone to Bath, noted since ancient times for its mineral springs, to practise, hoping to find there a more lucrative field among the swarm of invalids who frequented the resort than he had found in London. He was doomed to disappointment and returned to London full of disgust to make his last stand. He gave up at last when he couldn't make enough to support a chariot (not the sort you see at Barnum & Bailey's). "A chariot," he insisted, "is necessary to every raw surgeon," adding that a "walking surgeon" was considered as an "obscure pedlar."

But if the medical profession did not afford Smollett an abundance of what the scoffers are wont to call filthy lucre, it at least furnished him with a wealth of material for his novels. Truly, he gave the man of medicine a flying start as a prototype in narrative fiction. As he had been a surgeon's mate, so was Roderick Random a surgeon's mate, and many of their experiences, we may safely assume, were identical. Roderick was but one of a host of medical characters in Smollett's writings. The crabbed old doctor dwelt much on disease and deformity, physical sufferings and weaknesses. He seemed to revel in them and, all in all, there is little doubt that he overdid it.

Smollett's medical career began in Glasgow, Scotland, where, in 1736, after having been educated at Glasgow University, he was apprenticed to a noted surgeon. He was then fifteen years old, having been born in 1721 at Dalquhurn, Dumbartonshire, Scotland, where his family were petty lairds. Three years after his apprenticeship he went to London with a poetic drama, *The Regicide,* based on the life of King James II, in his pocket. This trip to London forms the first part of *Roderick Random.* He joined the navy when theatrical producers in London manifested a cold indifference toward his play. He was not long in the navy. He joined it in 1741 and served on the Cumberland during the siege of Cartagena, the chief Spanish stronghold in America. When the siege was given up as a lost hope he quit the service and lingered in Jamaica long enough to pick up a wife, Anne Lascalles, whose small fortune aided him later in his efforts to establish himself in practice in London and Bath. When he returned to London from Jamaica he set up in practice in the then fashionable Downing Street. All this time he was without a degree. It was not until 1750, when he was about thirty, that he received his degree at Marischal College, Aberdeen, Scotland.

Smollett was one of the three pioneer novelists of England—or of Europe, for that matter. It seems incredible that less than two hundred years ago there wasn't any such thing as a novel in English literature. Samuel Richardson's *Pamela* was the first, quickly followed by Henry Fielding's *Joseph Andrews* and Smollett's *Roderick Random.* These three men immediately put the novel in the front rank as the chief favorite of the reading public. Poetry, essays, dramas—all had to take a back seat. Fiction, the infant prodigy, vanquished them all at one fell swoop. "It is very important to note," says Edmund Gosse, "the curious diverging between these three great writers, because they exemplified the three great classes into which almost all subsequent novels can, with more or less ease, be divided." Smollett's specialty was caricature. He is conceded to be the greatest English caricaturist, other than Charles Dickens, in English literature, and Dickens was one of Smollett's disciples. "Without Smollett," says Gosse, "Dickens would be no more what he is than Thackeray would be without Fielding."

Naturally, Smollett's influence on English literature has been tremendous. For one thing, the immense crop of sea fiction began with Smollett's *Roderick Random.* In it he gave the first living picture of the life of the seafaring man. The sea and the men who live upon it had figured, of course, in English literature since Chaucer, but it was Smollett who introduced the British tar as a new and vital character. Sailors and the sea figure in his stories almost as much as medical men. Smollett did a vast amount of writing of one sort and another, both before and after he gave up medical practice. Odes, dramas, essays, histories, translations, medical treatises, books of travels—in all something near a hundred fat volumes. Much of this was hack work in which Smollett had assistance.

None of his fiction is genteel reading. Anyone of a squeamish turn of mind had better keep away from it. That is why Time has played such havoc with his popularity. He is too gross even for many seasoned readers. His heroes invariably are libertines and ruffians; his heroines, as Andrew Lang puts it, "are regarded by his heroes rather as luxuries than as ladies." Indecencies and grossness abound in his stories, but he certainly gave us a vivid picture of how the other half lives. As a novelist he contributed nothing to the form of the novel. His was the old, rambling style, the "picaresque" type of story. It was in the content of his work, the matter and his treatment of it, that makes him important in literary history. It was Fielding who established the form of the novel. Smollett's works were merely a string of sometimes brilliant episodes. But both, by developing the actual life around them, left the novel supreme in English imaginative fiction.

THE TYPHUS SITUATION

The following is an abstract of the report issued by the Public Health Committee of the New York Academy of Medicine. The recommendations they suggest are vital and timely. Typhus should not be allowed to gain a foothold in this country.

The occurrence of typhus fever in New York City is not an extraordinary event. At no time has the city been entirely free from typhus fever. It has lingered here endemically for years, appearing in the mild form called Brill's disease. In 1917 twenty-four cases were reported, and in 1918 thirteen cases. In connection with these cases the Health Department report states that 'none of those affected were recent immigrants nor had they been in contact with those who had recently arrived in this country.' Among the cases also which have recently occurred, some are reported to be of local origin and not in any way connected with the cases originating on the other side.

The segregation of the sick from the healthy, and the destruction of the carrier which is known to be the louse, particularly the pediculus corporis, are essential to prevent the dissemination of the disease. As typhus fever during epidemics may affect individuals in such a mild form as to escape the detection even of trained physicians, and as infected lice may be carried from districts where epidemic typhus exists and may thrive on the bodies and in the clothing of those who are naturally immune or who have become so after an attack of the disease, no other method than the destruction of all lice living on the persons and in the clothing or bedding of those who come from typhus infected districts, will prevent the transmission of the disease.

It is essential that disinfestation should be applied to all immigrants coming from countries where the disease is prevalent, whether arriving on typhus ships or on ships free from typhus.

It is imperative that this process should be applied at the port of embarkation, to prevent as far as possible the infestation of persons and ships. As an additional precaution, it would be most desirable to reexamine, during the course of the voyage, all those immigrants who before embarkation went through the delousing process, and immediately to subject such as were still infested, together with their clothing and effects, to a delousing process while still on board. On arrival here, those individuals on whom lice were again found, together with their clothing, bedding and effects, should be once more subjected to cleansing and delousing.

The necessity of preembarkation measures has been recognized by the United States Public Health Service. No vessels sailing from foreign ports receive bills of health from American consuls until the passengers have been satisfactorily disinfested. That this requirement should be strictly enforced is distinctly to the advantage of the steamship companies, as an outbreak of illness among the passengers results in clearing delays and involves extra expense at American ports of disembarkation. The sanitary authorities have always been on guard against the introduction of typhus from abroad, and particular watchfulness has been exercised since our troops began to return from Europe. The effects of the sanitary cordon established have been salutary, as the methods of control are well known, and by their diligent application typhus fever can be well held in check.

No imminent danger of the spread of typhus fever exists. Nevertheless, no effort should be abated on the part of the Federal and local health authorities, each in their respective fields, to minimize the possibility of the introduction and spread of the disease.

Because of the existence of the endemic type of typhus fever in this city, if for no other reason, the efforts of the City Health Department should be directed toward the elimination of pediculosis, from which a considerable portion of the city population suffers. The reports of school inspections show that every year over 200,000 children are found to be infested with lice. It would seem, therefore, that no effort should be spared to rid our own population of the extensive prevalence of pediculosis.

GROUP CONSULTATION CLINICS.

The New Poor, who, like the doctors, make no more than before the war, wrinkle their brows at this idea of group consultations. That convenient man, the general practitioner is becoming extinct, he is now a particular practitioner, who will quickly refer you to a specialist, sometimes because electrotherapy is required or pictures must be made to get a correct diagnosis. It has long been urged that more buildings should be used entirely as offices by medical men, so facilitating the sending of a patient quickly to a confrère, then adding the opinions together before deciding on treatment.

The group consultation clinic has been formed by the New York State Department of Health, with the State Department of Education, the State Hospital Commission, State Commission for Mental Defectives, State Charities Aid and the American Red Cross to give aid to doctors in the country sections of New York State. The divisions are pediatrics, orthopedics, chest, adult life, neurology, psychiatry, mental deficiency, surgery, gynecology, venereal disease, oral surgery, with a well equipped laboratory and x ray. The clinic only takes those patients referred by doctors. A nurse visits the patient beforehand and arranges for any preliminary tests and the taking of the patient to the clinic, to which the family physician is also invited to confer. The evening after the clinic a meeting of the consultants is arranged for, when the more interesting and unusual cases are discussed. The consultant in the original division gathers all the opinions and sends to the doctor who sent the patient. Up to the present the idea is taking root and flourishing though we can foresee endless difficulties ahead from the patient's point of view.

◆

News Items.

Harvey Society Lectures.—Dr. S. B. Wolbach, associate professor of pathology and bacteriology, Harvard University, delivered the eighth Harvey Society lecture at the New York Academy of Medicine, Saturday evening, March 12th. His subject was Typhus Fever and Rickettsia.

$10,000 for Radium Fund.—The Marie Curie Radium Fund Committee received recently a check for $10,000 from a woman who had been cured of cancer through the application of radium. The committee is raising $100,000 with which to provide Mme. Curie with one gram of radium, that she may continue her experiments.

President Harding's Personal Physician.—Announcement is made that Dr. Charles E. Sawyer, of Marion, Ohio, the Harding family physician, will be appointed a Brigadier General in the Army Medical Reserve Corps and assigned to active duty at the White House as personal physician to President Harding. Through this assignment to active duty Dr. Sawyer will be able to draw the pay and allowances of a brigadier general of the army. The pay amounts to $6,000 a year and the allowances, which are for quarters, light and fuel, will increase his emoluments to $7,512.

Personal.—Dr. Smith Ely Jelliffe, of New York, was made an honorary member of the Société de Médecine Mentale de Belgique, at its recent reunion.

Dr. Pearce Bailey, of New York, who was chief of the division of neuropsychiatry in the Surgeon General's office, Washington, D. C., during the war, has been awarded the distinguished service medal.

Professor Jules Bordet, to whom the Nobel prize in medicine was awarded recently, has been elected a member of the Belgian Senate.

Dr. Edward A. Spitzka, of New York, announces that on March 1st he assumed his new duties in the Neuropsychiatric Section, Medical Division, War Risk Insurance Bureau, Washington, D. C.

Admiral Grayson Naval Dispensary Chief.—Rear Admiral Cary T. Grayson, President Wilson's personal physician, has been ordered by the Navy Department to duty as officer in charge of the Naval Dispensary in Washington, D. C. He relieves Captain J. B. Dennis, who has been transferred to the hospital at Great Lakes, Ill.

Dr. Gilbride Elected Surgeon to Mercy Hospital.—At the last meeting of the staff of Mercy Hospital, Philadelphia, Dr. John J. Gilbride was elected surgeon to the hospital. He was formerly assistant professor of surgery and assistant demonstrator of anatomy in the Medico-Chirurgical College, and was also connected with the Philadelphia Polyclinic and the Graduate School of the University of Pennsylvania. He will have charge of general surgery at Mercy Hospital. His assistants are Dr. F. M. Hopkins and Dr. F. Fortune.

Annual Dinner of New York University Alumni.—The New York University Medical College Alumni will hold their second annual dinner at the Hotel Biltmore, New York, on Thursday evening, March 31, 1921. Dr. Robert J. Carlisle is president of the association. The committee in charge of the arrangements for the dinner are: Dr. Robert J. Wilson, chairman; Dr. Herman A. Haubold, and Dr. John A. Mandel. The dinner will be the occasion of class reunions. Last year the oldest class represented was the class of 1869, and it is expected to go back further than that at this year's dinner.

Postgraduate Course in Infectious Diseases and Public Health.—The third annual postgraduate course in infectious diseases and public health for health officers and physicians, offered through the cooperation of the Albany Medical College and the New York State Department of Health, began on March 3d under the direction of Dr. Charles C. Duryee, of the State Department of Health. Registration was limited to graduates in medicine, and as far as practicable the course consists of informal conferences and practical demonstrations. The laboratory demonstrations will be held at the State Laboratory, and the conferences and lectures at the Albany Medical College and the Albany Hospital, on Thursdays and Fridays, March, April, May and June, the final examination being held on June 17th.

Changes in the Faculty of New York University.—The appointment of twenty-seven new members to the faculty and several promotions have been announced by the registrar of New York University. In the medical school the appointments are as follows:

Dr. Paul Edward Bechet, instructor in dermatology; Dr. David E. Boas, lecturer on nervous diseases; Dr. Wesley Marshall Hunt, instructor in otology; Dr. Alexander T. Martin, instructor in pediatrics; Dr. William J. Tiffany, instructor in neuropathology; Dr. Jay Dashiell Whitham, instructor in otology. The following promotions were announced: Dr. John J. Rothwell, from lecturer in dermatology to clinical professor of dermatology; Dr. A. Raymond Stevens, from instructor in surgery to clinical professor of genitourinary surgery; Dr. Abraham Zingher, from instructor to lecturer on bacteriology.

Died.

Becerra.—In Guayaquil, Ecuador, on Thursday, March 3rd, Dr. Leon Becerra, Chief Health Officer of Guayaquil.

Brenneman.—In Saxton, Pa., on Friday, February 11th, Dr. Michael B. Brenneman, aged eighty-two years.

Bushong.—In Philadelphia, Pa., on Saturday, February 26th, Dr. George L. Bushong, aged thirty-eight years.

Cameron.—In Dublin, Ireland, on Sunday, February 27th, Sir Charles Alexander Cameron, aged ninety-one years.

Child.—In Brooklyn, N. Y., on Wednesday, February 23rd, Dr. Edward Moses Child, aged sixty-nine years.

Dehoff.—In York, Pa., on Wednesday, February 16th, Dr. John D. Dehoff, aged seventy-three years.

Dodds.—In Sanford, Fla., on Tuesday, February 15th, Dr. Benjamin Claude Dodds, of Huntingdon, Tenn., aged thirty-nine years.

Foster.—In Portland, Me., on Thursday, February 17th, Dr. Barzillai Bean Foster, aged seventy-three years.

Gardiner.—In Philadelphia, Pa., on Monday, February 28th, Dr. George W. Gardiner, aged sixty-nine years.

Garrett.—In Los Angeles, Cal., on Friday, February 18th, Dr. Edward H. Garrett, aged forty-eight years.

Gerhard.—In Angelica, Pa., on Monday, February 21st, Dr. Tobias Gerhard, aged eighty-five years.

Gifford.—In Haddonfield, N. J., on Friday, February 25th, Dr. Charles W. Gifford, aged eighty-one years.

Greene.—In Berkeley, Cal., on Wednesday, February 16th, Dr. Frances M. Greene, aged fifty-seven years.

Groom.—In Bristol, Pa., on Sunday, February 20th, Dr. Evan J. Groom, aged eighty-eight years.

Hayden.—In Bethel, Ind., on Sunday, February 13th, Dr. John H. Hayden, aged eighty years.

Humphrey.—In Port Allegany, Pa., on Saturday, February 12th, Dr. Victor O. Humphrey, aged thirty years.

Jackson.—In Madison, Wis., on Friday, February 11th, Dr. James Albert Jackson, aged eighty years.

Jackson.—In South Livonia, N. Y., on Thursday, February 24th, Dr. Katherine J. Jackson, of Dansville, aged eighty years.

Jones.—In New York, on Saturday, February 26th, Dr. William J. Jones, aged forty-eight years.

Kanzeler.—In Ogden, Utah, on Thursday, February 17th, Dr. Reinholt Kanzeler, aged thirty-eight years.

Klepher.—In Altoona, Pa., on Tuesday, February 22nd, Dr. Ralph C. Klepher, aged sixty-five years.

Krozer.—In Baltimore, Md., on Tuesday, February 22nd, Dr. John R. Krozer, aged ninety-four years.

Lemon.—In Milwaukee, Wis., on Tuesday, February 22nd, Dr. Charles H. Lemon, aged fifty-eight years.

Liggett.—In Winnemucca, Nev., on Tuesday, February 8th, Dr. Wilbur T. Liggett, aged sixty-seven years.

McBride.—In Ravenna, Ohio, on Sunday, February 20th, Dr. Marion G. McBride, aged sixty-two years.

McGuire.—In New York, on Monday, February 28th, Dr. Francis A. McGuire, aged sixty-seven years.

McLean.—In Chicago, Ill., on Friday, February 11th, Dr. Malcolm B. McLean.

Mann.—In Buffalo, N. Y., on Wednesday, March 3rd, Dr. Matthew D. Mann, aged seventy-six years.

Skillern.—In Ardmore, Pa., on Thursday, February 17th, Dr. Samuel Ruff Skillern, aged eighty-six years.

Stevens.—In Malden, Mass., on Wednesday, February 23rd, Dr. Andrew J. Stevens, aged seventy-four years.

Sullivan.—In Providence, R. I., on Sunday, February 13th, Dr. Walter G. Sullivan, aged forty-six years.

Taber.—In Brooklyn, N. Y., on Monday, February 21st, Dr. J. Russel Taber, aged seventy years.

Thompson.—In Philadelphia, Pa., on Friday, February 18th, Dr. John R. C. Thompson, of Bridgeton, N. J., aged sixty years.

Venable.—In Franklin, Ky., on Monday, February 21st, Dr. Charles L. Venable, aged fifty-three years.

Watson.—In Clifton Springs, N. Y., on Tuesday, February 15th, Dr. Frederick C. Watson, of Cazenovia, N. Y., aged forty-nine years.

Winston.—In Valley Head, Ala., on Thursday, February 10th, Dr. John Nelson Winston, aged eighty years.

LONDON LETTER

(From our own correspondent.)

LONDON, *February 9, 1921.*

The Postgraduate Question in London—The Rôle of Temperature in the Causation of Malaria—Roll of the Midwives—The Housing Question in Great Britain—Anthrax from Shaving Brushes.

Properly organized postgraduate teaching is required in London, if this city is to take its rightful place as the European centre for such instruction. It has been pointed out on several occasions that, as regards wealth of clinical material and men fitted to teach, London is unsurpassed, but all the advantages possessed will go for nothing, and the German schools will come to the front again unless systematic organization is introduced here, and practical steps to bring this about must be taken promptly. It is, therefore, encouraging to learn that the announcement has just been made that the Minister of Health has appointed a committee to inquire into the whole question of postgraduate education in London. The Earl of Athlone, brother of Queen Mary and chairman of the Middlesex Hospital, will act as chairman of this committee, and the following members of the medical profession will act with him: Mr. H. J. Cardale, M. B., Sir Wilmot Herringham, M. D., Sir George Makins, F. R. C. S., Sir George Newman, M. D., chief medical adviser to the Ministry of Health, Sir E. Cooper Perry, M. D., Mr. J. Dill Russell, M. B., F. R. C. S., and I. W. Shore, M. D.; Mr. A. L. Hetherington will act as secretary of the committee. The subject of inquiry will be "to investigate the needs of medical practitioners and other graduates for further education in medicine in London with a view to submitting proposals for a practical scheme for meeting them."

The *Bulletin of the Fellowship of Medicine and Post-Graduate Medical Association,* of February 5th, commenting upon the move by the Ministry, points out the fact that the State's concern in the matter requires little demonstration. Postgraduate instruction is a channel by which medical progress is made available for the population; practitioners in the daily routine of their work have no time for textbook reading, or for gaining knowledge of the newest advances in their profession, or even, it may be added, of glancing at the medical journals. At the end of a heavy day's round of shop the natural inducement is to seek leisure in some light reading, if time permits; this slight recreation has been truly earned. Meanwhile, the world of progress begins to leave them behind; methods of treatment which at one time were new, and to which they still adhere, have possibly become old, superseded by other methods based upon scientific advancement, to which their knowledge does not extend. To keep pace with medical progress is only possible by keeping in contact with its sources confined for the most part to the educational centres. The value of postgraduate training is thus exemplified. Under its teaching a practitioner has a ready means of restocking his knowledge. This new knowledge is afterwards diffused through the population, and the State benefits from the improvement which follows in the public health.

This is an excellent exposition of the relation of the State to postgraduate training and the benefits which accrue to the State on account of the medical practitioners of a country being kept up to date in medicine and surgery. Whatever improves the health of the population of a country is of obvious advantage to the State, and consequently good postgraduate training is more or less essential to the wellbeing, material and physical, of the inhabitants and to the State. However, little argument is required to show that properly organized postgraduate instruction is of benefit to a nation. The truth is evident. Moreover—and this is the phase of the matter which mainly interests American medical men—unless a thoroughly organized system of postgraduate teaching prevails in a foreign city, these men will not seek instruction in that city.

Although, as previously stated, the opportunities and facilities for postgraduate training in London have been almost ideal up to the present time, organization has been lacking. The Fellowship of Medicine Post-Graduate Association, in the founding of which Sir John MacAlister played a leading part, contains the germs of a successful scheme. Indeed, to say that it only contains the germs is giving it faint praise. It may be said that if the scheme is adequately developed there is every reason to anticipate for it a prosperous future. But in order that this object may be achieved, it must be earnestly taken up by the medical profession of London. As is pointed out editorially in the *Medical Press and Circular,* February 2, 1921, the scheme lacks one important though essential detail, namely, a hospital or centre for postgraduate work. The Post-Graduate Medical School of New York would be shorn of the greater part of its capacity for usefulness were it not for the splendid hospital attached to it. To quote again from the *Medical Press and Circular,* the present teaching schools of London can only lend an extramural hand in the scheme by throwing open their classes to the Post-Graduate Association. The various special hospitals willingly do the same. Yet it is patent that no postgraduate school can be worked successfully upon these lines. Therefore the solution of the problem lies in the amalgamation of one of the non-teaching general hospitals with the scheme or in the building of a new postgraduate hospital. A centre is absolutely necessary, and until this difficulty is overcome an impassé has been reached. The report of the Minister of Health's Committee will be awaited anxiously, and it is to be hoped that it will be issued soon. Time is passing, and if London is to compete on favorable terms with existing medical centres, a practicable scheme must be set on foot as quickly as possible.

* * *

At a meeting of the Royal Society of Tropical Medicine and Hygiene, held in the rooms of the Medical Society of London on January 21st, Lieutenant Colonel C. A. Gill, I. M. S., read a paper on the Influence of Humidity on the Life History of Mosquitoes and Their Power to Transmit Infection. Colonel Gill in the course of his paper drew attention to the fact that recent observations made at the London School of Tropical Medicine, and also by Rouband, led to the conclusion that temperature exerted a direct effect on the malarial parasite in the mosquito; low temperature inhibited the growth of the oocyst, and within certain limits its rate of development was dependent on the mean temperature. In the case of Culex fatigans, length of life was compatible with a wide range of temperature, but vitality was reduced at low temperatures. He consequently regarded the mechanism of malarial infection as being in no small degree influenced by and dependent on the combination of the factors of temperature and humidity, and the importance of ascertaining the optimum condition of these factors and the range between the limits favorable to the transmission of infection. Such information would serve to elucidate certain points bearing on the endemiology and epidemiology of malaria.

As examples Colonel Gill mentioned that although the distribution of anophelines in the United Kingdom was widespread indigenous malaria was much restricted, and he subsequently showed that this was due to its confinement to areas where favorable conditions of temperature and humidity prevailed. Similarly, he explained paladism sine malaria, the concurrence of anophelines and human carriers with the absence of fresh infections. He also regarded malaria sine paladism or the occurrence of new infections in localities where there were few anophelines and human carriers, provided there was a period of potential infection, as attributable to favorable influences of the two factors concerned. Finally, he asserted that the rôle of meteorology was a subject of considerable importance, and that the practical bearing of the information it afforded was the possibility, so long as the required meteorological data were available, of determining the season of the year and the duration of the period during which malaria could normally be acquired in any particular area. It seemed probable, indeed, that with the knowledge provided by the meteorological conditions in the United Kindom less importance could be assigned to antimosquito measures in the prevention of the spread of malarial infection in Great Britain. This means, in short, that the temperature and humidity of Great Britain generally are such that even if the malaria bearing mosquitoes are present that the infection is unlikely to spread. This information is satisfactory in view of the fact that many British soldiers have been stationed in tropical countries notoriously malarious. Alarm has been expressed by some medical writers that, unless precautionary measures were taken, malaria might become prevalent in the country. According to Colonel Gill there is little fear of this happening.

* * *

On March 31, 1920, the midwives' roll contained 45,960 names, a net increase in twelve months of 1,794. Of this total, 37,056 were trained and 8,904 untrained. The percentage of trained midwives who practice as such is relatively small. This percentage is estimated by the Central Midwives' Board at 21.5 of the trained women on the roll, of the untrained approximately 40.7 per cent. are in practice, though frequently to a small extent only. In 1919 the total number of practising midwives was 11,488, of whom 7,865, or 68.5 per cent., were trained, and 3,623, or 31.5 per cent., were untrained. During the year fifty-four midwives were dealt with by the board under its penal powers to answer charges of malpractice, negligence, or misconduct. These cases resulted in the immediate removal from the roll of the names of thirty-five women. Two others were censured and two cautioned, while in four cases no action was taken. Of the fifty-four cases tried, twenty-two, or nearly one half, were those of women who had neglected to advise medical assistance in cases of ophthalmia neonatorum.

* * *

The shortage of houses in Great Britain has obviously had a very bad effect on the general health. Not only is there a lamentable lack of housing accommodations, but a considerable proportion of that which exists is inadequate and unhygienic. The result is that health and morals suffer, and, in fact, a good deal of the industrial unrest at the present time is due to inadequate and bad housing. The Government is endeavoring to grapple with the problem, and have made more progress than might have been expected with their housing scheme during the past twelve months. Their efforts, however, are greatly hindered by the shortage of labor, especially skilled labor. Statistics with regard to skilled labor in England and Wales are appalling in their significance. For example, in 1910 there were 73,012 masons; in 1920 were were 19,310. There were 9,796 slaters in 1910, there were 3,673 in 1920; there were 31,301 plasterers in 1910, in 1920 there were 12,067; there were 115,995 painters in 1910, in 1920 there were 53,063. Still, as said before, the Government is making progress with their scheme, and some 60,000 houses were commenced in 1920.

* * *

A naval order states that several cases of anthrax which have occurred recently in this country have been traced to infection from the bristles of brushes imported from abroad, mainly from Japan. Sash tool and shaving brushes have been found to be a source of infection in samples taken by the Ministry of Health. No brushes for Admiralty service are being obtained from Japanese sources, and the Navy, Army and Royal Air Forces institutes sell shaving brushes of French and British manufacture only, with a guarantee that they are free from anthrax. Although no special apprehension is felt as regards anthrax occurring in the British Navy from service brushes, a warning has been issued that no sash tool brushes are to be used for shaving or other purposes for which they are not intended, and it is pointed out that care shall be taken that the bristles of these brushes do not come in contact with the skin, especially before use. Although not absolutely reliable, the Ministry of Health recommends the following method of disinfection: Thoroughly wash the hair of the shaving brush with soap and warm water, to which a little washing soda has been added, and immerse for one hour in a disinfecting solution, consisting of two tablespoonfuls of formalin in half a pint of water. The solution should be at a temperature slightly above body heat. After removal from this solution the brush should be allowed to dry before use. Care should be taken not to allow the hair of the brush to come into contact with the hands.

Book Reviews

MASTOIDS ROENTGENOLOGICALLY CONSIDERED.

Mastoids Röntgenologically Considered. By Frederick M. Law, M. D., Röntgenologist to the Manhattan Eye, Ear, Nose, and Throat Hospital, New York. Forty-two Röntgen Studies on Twenty-one Photographic Plates and Eleven Text Illustrations. Volume I, Annals of Röntgenology Series of Monographic Atlases. Edited by James T. Case, M. D., President of the American Röntgen Ray Society. New York: Paul B. Hoeber, 1920. Pp. ix-37.

In no field of medical endeavor can the x ray be of more utility than in the diagnosis of mastoid conditions. In order to utilize this valuable diagnostic adjunct we must have good pictures and be able to interpret them intelligently. An atlas of this type has a special field of usefulness, for at any time in any given case the plates in the book may be consulted and compared with those taken in the case. By adhering closely to the author's technic there should be no cause for marked variation, and so we have a comparative scale, the value of which can only be appreciated by physicians who have anxiously awaited the aid of the x ray, only to be puzzled by the plate, remaining as much in doubt with the plates before them as they were before the plates were taken. As we are told in the preface, it is a most difficult thing to carry over the memory of the appearance of an x ray photograph denoting a special lesion.

From experience gained during the war the reviewer learned to appreciate the utility of the x ray, not only as an aid to diagnosis but as an invaluable aid to the surgeon to serve as a guide. This held true for the removal of foreign missiles, bone surgery and infected states in the lung and other tissue. This field of usefulness should be just as great in the mastoid region. When working in the neighborhood of the mastoid, a region where there are so many vessels and nerves, where all short cuts should be taken, a region demanding great skill and perfection of technic on the part of the operator, every means at our disposal should be made use of to the fullest extent. Every possible type of infection is considered in this book, and the right and left mastoids given for comparison.

FREDERICK M. LAW, M. D.,
Author of *Mastoids Röntgenologically Considered.*

American medicine may well be proud of this magnificent collection of radiographic plates. With the publication of such works we need not say, when we see a fine piece of work from Europe, "It is too bad, but we have nothing like that in America." And not alone from the point of view of artistic production may this book be praised; its usefulness is indeed great. The technic, which is explained with great clarity, may be of chief interest to the x ray operator, but the findings are so clearly explained that they will be of value to the general practitioner as well as to the otolaryngologist and head surgeon.

Perhaps the most important portion of the book, though it embraces only part of the text and contains a few illustrations, is that dealing with technic. Much stress is placed on simplicity of procedure in preparing the patient in the proper posture, the length of exposure, and the development of the plate. In order to enhance the usefulness of the book; in order to make the plates more valuable from the comparative and interpretative points of view, heed should be given to this portion of the text. It may be that the reader will feel that his technic is very good, or good enough or even better than that described by Law, but that is not the important point. The thing to be settled is a uniformity of technic, and it may be that in the beginning of an effort of standardization the work may appear to be inferior, but when the operator becomes accustomed to the rules laid down by Law no such difficulties will be encountered.

Cooperation is another important thing. The surgeon should know the technic of the x ray operator so he may better know how to interpret the plates. The x ray operator should know some of the uses to which the plates will be put, and in many cases make a study of the patient's history. Cooperation is essential, not only in this field but in every line of medical endeavor.

The explanatory notes are concise, and convey the interpretations admirably. They are written in three languages, English, French and Spanish, in three parallel columns. This will extend the scope and usefulness of the book, and is a splendid idea that should be utilized more often in the preparation of medical textbooks. By the use of this method it will not be necessary to translate this book into other languages, one edition sufficing for many countries. The Spanish and French texts should prove especially useful in the South American countries.

The publishers are to be complimented on this excellent piece of bookmaking. It is hoped that the balance of the series, which are edited by James T. Case, president of the American Röntgen Ray Society, will prove to be as good as this the first number. With the completion of such a series we shall have a standard set of reference books which can be used as a basis for future building.

TUBERCULOSIS.

Vorlesungen über Bakteriologie, Immunität, spezifische Diagnostik und Therapie der Tuberkulose. Für Aerzte und Tierärzte. Von Dr. ERNST LÖWENSTEIN, a. o. Professor an der Universität Wien. Jena: Verlag von Gustav Fischer, 1920. Pp. 476.

This is one of the most voluminous works on tuberculosis which have appeared in Germany or Austria since war times. Although it chronicles no startling discoveries in tuberculosis science, this book, by reason of its thoroughness and careful descriptions of all that is known up to date, should be considered a valuable addition to the tuberculosis literature of today. One hundred and sixty pages are devoted alone to the description of the various types of tubercle bacilli, as the human type, the bovine type, and the avian type. The latest method of staining and technic of cultivating the bacillus are considered with unusual care, also the relative frequency of the human and bovine types has been considered and a few cases of avian tuberculosis in human beings are recorded. There appears an interesting description of tuberculosis in coldblooded animals, such as carp, snakes, frogs, and turtles, which is perhaps more of purely scientific than of practical interest, unless there are still some believers in the value of turtle serum, of which no mention whatsoever is made in this most recent book, in spite of Friedmann's frequent efforts to get recognition in Germany.

The most valuable chapter in the book is perhaps that on congenital tuberculosis, in which the author comes to the conclusion that in the higher animals, including man, intrauterine infection is extremely rare, and if it does take place it is usually toward the end of pregnancy and when the disease has so far progressed that the bacilli are found in the maternal circulation. The author comes to the conclusion, which is borne out by general experience, that children of a tuberculous mother can develop quite normally when they are separated from the mother and placed in good, hygienic environments.

In the chapter on Sources of Infection it is interesting to note that the author believes that direct outdoor tuberculous infection from street dust is virtually impossible, but he emphasizes the great danger of indoor infection. It is gratifying to see that, like so many American hygienists and anti-tuberculosis workers, he protests against the use of the broom, brush and feather duster and the beating of carpets, which methods he wishes to see replaced by the pneumatic cleaner.

Concerning immunization against bovine tuberculosis, the author admits freely that in spite of the enormous amount of work done along this line, no practical results have been obtained. He emphasizes the fact that the single prophylactic vaccination with living tubercle bacilli only lasts a year, and after that the resistance is lost. In other words, he confirms the maxim that only the tuberculous organism can be rendered immune by tuberculin. *"Nur der tuberkulose Organismus kann tuberkuloseimmun sein."* He regrets that the immunization experiments in veterinary practice have been suspended, and hopes for their early resumption.

In the chapter on Immunity in Human Beings, nothing new is set forth, but interesting is one of his conclusions that, as a result of all that is known concerning it, it is a fact that in the adult the danger from infection is not nearly as great as formerly assumed. In the chapter on Tuberculous Infection and Tuberculous Disease, we find some very interesting conclusions. Thus the author says: "We know that infection in children is the more difficult to combat the younger the child, but that the former belief that a positive Von Pirquet in such a child would be equivalent to a death sentence is not borne out. We know today that tuberculosis may heal even in a child while still taking the breast." (The reviewer presumes that the child has had a healthy wet nurse.)

The book gives a very thorough description of the various methods of using tuberculin as a diagnostic means. Concerning the subcutaneous tests, the author comes to the conclusion that the smaller the dose of tuberculin injected the greater the diagnostic value. Prior to giving the contraindications to subcutaneous injections of tuberculin for diagnostic purposes, the author asserts that he has resorted to it in many cases without a single fatal result, and he ascribes the reported fatalities to the excessive doses formerly used. He nevertheless cautions against the use of tuberculin injections where there is chronic headache (localized), cardiac complications, diabetes, nephritis, and epilepsy, and very pertinently says that in cases of doubt of the presence of typhus or miliary tuberculosis a tuberculin injection will not clear up the situation. He then describes the various other methods of tuberculin reaction for diagnostic purposes, such as the Von Pirquet, the Morro (Koch's tuberculin and anhydrous lanolin in equal parts as a salve), Epstein's stab reaction, Mendel's intracutaneous reaction, Wolff-Eisner's conjunctiva reaction, Lafitte's rhinoreaction, Oppenheim's urethral reaction, etc.

Eighty pages of this monumental work are devoted to the therapeutic use of tuberculin and its modifications, such as the bacilli emulsion, the albuminous free tuberculin, tuberculol, tuberculin Denys, tuberculin Von Beraneck, Klebs's tuberculocidin, Calmette's Cl, the iron tuberculin, tuberculoplasmin, tuberculotoxin, Von Ruck's watery extract of the tubercle bacilli, Levy's tebean and Meyer-Ruppel's tuberculosis vaccine, and Ishigami's tuberculotoxoidin. It would require too much space to give the author's opinion on these various preparations. He is evidently in favor of judicious tuberculin therapy, and says that too small doses cannot accomplish anything. He says if the dose is too small to dissolve a localized area, which is the object of tuberculin therapy, we might just as well give up the use of tuberculin as a therapeutic factor. Of course, like all authors, he speaks of the importance of treating each case as an individual, and enumerates the well known contraindications.

As a whole, this book of 476 pages gives us the widest up to date knowledge on the bacteriology and immunity of tuberculosis and the use of tuberculin as a diagnostic and therapeutic means in tuberculosis in animals and man. As the final chapter Professor Löwenstein adds his views on the combat of tuberculosis as a plague of the masses (*Volksseuche*), and says, among other things, that the treatment of the tuberculous is not alone sufficient to prevent the spread of tuberculosis. This is evidenced by the fact that, although the mortality was diminished before the war, the morbidity was not, and that now the latter is increasing and the former has again attained its prewar record. As a means to successful combat he gives the well known methods in vogue in this country. He insists particularly on the removal of the infant from its tuberculous environment, and emphasizes that, while the treatment may be a private affair or based on social insurance, prevention should be concerned with the welfare of the entire population, hence it must be made a matter of the State.

The volume is to be highly recommended to the specialist and student of these vital problems, the solution of which is of such paramount importance to the well being of humanity throughout the world.

REFRACTION AND MOTILITY OF THE EYE.

Refraction and Motility of the Eye. With Chapters on Color Blindness and the Field of Vision. Designed for Students and Practitioners. By Ellice M. Alger, M. D., F. A. C. S., Professor of Ophthalmology at the New York Post-Graduate Medical School, etc. With One Hundred and Twenty-five Illustrations. Second Revised Edition. Philadelphia: F. A. Davis Company; London: Stanley Phillips, 1920.

This, the second edition of Dr. Alger's little book, should form a welcome addition to the library of both the general practitioner and the special eye man. Contrary to the general run of works devoted to this subject, the book is supplied with a great deal of physical, anatomical and physiological data bearing on the subject, so that the reader is gradually led to reason out for himself the whys and the wherefores, instead of being offered ready made dogmatic rules which he takes for granted and indisputable. The perusal of the little book cannot but lead to the conclusion that refraction, which is both a science and an art, should be recognized as a very important branch of ophthalmological practice, that has in certain aspects a more or less direct bearing on communal welfare, as, for example, refraction of school children's eyes, and similar social activities. It cannot be reiterated often enough, even at the risk of being trite or conventional, that in many cases accurate, painstaking refraction will not only correct impaired vision, but will frequently improve either the general health of the subject or influence favorably one or many symptoms that have balked the efforts of many a neurologist or gastrologist.

The last chapter on ocular malingering, while not bearing directly on the subject of refraction, will be of practical interest to those eye men who are brought in contact with industrial and accident insurance cases, where the detection of malingering is a matter of considerable importance financially and otherwise. Those of us who did eye work for the government in the various recruiting stations during the war well remember what difficulties we would occasionally encounter in detecting malingering in clever impostors who seemed pretty well versed in the methods of pretending amblyopia of one degree or another, with the purpose of evading service.

INDIRECT CALORIMETRY.

Laboratory Manual of the Technic of Basal Metabolic Rate Determinations. By Walter M. Boothby, A. M., M. D., and Irene Sandiford, Ph. D., Section on Clinical Metabolism, The Mayo Clinic, Rochester, Minn., and The Mayo Foundation, University of Minnesota. Illustrated. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 117.

The authors say they want indirect calorimetry available in every well equipped and scientifically conducted clinical laboratory, though it is, probably, the most difficult technically.

What will it do? We doubt whether the ordinary general practitioner has thought much about it. In each mammal there is a basal metabolism; that is, the minimal heat production of an organism measured from twelve to eighteen hours after food taking, and with the organism at complete muscular rest. This minimal heat production may be had by calorimeter, or, indirectly, by calculating the heat production from an analysis of the end products within the organism, or, specifically, from the amount of oxygen used and the corresponding amount of carbon dioxide produced, together with the total nitrogen eliminated in the urine.

The authors present a brief history of the instrument, which has won its way to general use. In the Mayo Clinic they have done more than twelve thousand tests and now average thirty-two a day.

AN INDIAN PIONEER OF SCIENCE.

The Life and Work of Sir Jagadis C. Bose, M. A., D. Sc., LL. D., F. R. S., C. I. E., C. S. I., Emeritus Professor, Presidency College, Calcutta; Director of the Bose Research Institute. An Indian Pioneer of Science. By Patrick Geddes, Late Professor of Botany (University College, Dundee), St. Andrews University, and Professor of Sociology and Civics, University of Bombay. With Portraits and Illustrations. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1920. Pp. xii-259.

As Patrick Geddes introduces Bose, we penitently recall the truth of that great Indian's words: "My special investigations have, by their very nature, presented extraordinary difficulties. I regret to say that during a period of twenty years these difficulties have been greatly aggravated by misrepresentations and worse. These obstacles, deliberately placed in my path, I can now ignore and forget."

His life is fine, not because of the obstacles we kindly placed in his way, but despite them. In all the dignity of knowledge he worked and waited until prejudice should be washed from men's eyes and narrow minds receive light. His life is not yet a closed story. It only began in 1858, in a village called Rarikhal, in Vikrampur, in the Decca District, where his father, Bhagaban Chunder Bose, was deputy magistrate, a man picked for capacity in many ways, one who could assume command of his own police and control many villages, a skill which the dacoits tested by open incendiarism and secret revolt.

Jagadis, a daring little boy, always asking questions, found him a wise father, who sent him to the vernacular, rather than the English Government school, when he was only five years of age, wanting him to know his own tongue and people first. His first English school was the Hare School in Calcutta which he attended when nine years old; later he went to St. Xavier's College in Calcutta.

Armed with his B. A. he determined to study medicine in London, but with a courtly deference to his wishes fitting in with his parents' means. He went, however, but malarial fever, apparently kala-azar, accompanied him, and not for two years did it give him much peace, and it left insomnia to keep him unnecessarily wideawake for another seven years. Health forced him to give up medicine in London, and he won a science scholarship at Christ's College, Cambridge, settling down after the middle of the second year to physics, chemistry and botany.

Now, triply armed with degrees, he eagerly set out for a visit home, with an introduction from Fawcett to Lord Ripon, who in turn gave him one to the Director of Public Instruction, a man not exactly genial, and who shared the foolish idea that Indians had no aptitude for exact science. He approved of the prevailing custom, that of not giving the higher posts to even the most highly qualified Indians, and objected to Bose being appointed officiating professor of physics in the Presidency College, Calcutta.

Three years passed, their fruit convincing colleagues that Bose had come to stay. His splendid effort to help pay off the family debts showed civilians also that he was a man as keen for honor as his father, as keen also for the diffusion of knowledge. The Governor General, with much trouble, managed to secure him an annual grant of £166 for future research. But Bose was overworked and disappointed. He wanted to visit European scientists. He won his way, after a refusal, it being decided that "to help him is to promote the cause of science all over the world."

Geddes wisely gives a sketch of Hertz and his electric waves, to show exactly what Bose did in their further development and how his researches passed rapidly into current science after his lectures at the Royal Society and the Friday Evening Discourses at the Royal Institution. His name was established. He was drawing near the end of his leave, yet Paris and Berlin were waiting to hear his explanations; 1897 marked his visit there. Cornu, Quincke, and the learned men of France and Germany were tremendously delighted to welcome him. Of friends in England, Lord Kelvin, Sir Henry Roscoe and others, were not wanting, though opposition was still looming. The highfalutin' *Spectator* and *Times* found something "of rare interest in a Bengalee of purest descent lecturing in London to an audience of appreciative European savants upon one of the most recondite branches of modern physical science."

The details of his work on molecular strain and its interpretation should be learned by studying Geddes's book, the section of getting photos without the action of light is very interesting, the response of the living and nonliving still more so. Bose had noted the curious phenomenon of fatigue shown by the receivers of his electric waves; how the fatigue was removed after rest, the receiver becoming insensitive when left idle for too long a period, the inertness being removed by an electric shock. For the first time in science he compares and parallels the responses to the exercitation of living tissues with those of inorganic matter.

Geddes says that Bose's paper came as a great surprise to the Paris International Congress of Physicists in 1900, and was regarded as the greatest paper read. At the British Association that same year, the physicists were enthusiastic, the physiologists perplexed and silent. The sensitive soul of Bose felt this at once, but he just went ahead, and, after two months' illness, worked out more fully the fatigue of metals, and, moreover, showed their influence to poison just as animals and plants do, particularly to oxalic acid.

Now the trouble began. Sir Burdon Sanderson, a physiologist, first complimented, then advised Bose to return to his work as physicist. As to the electric response of ordinary plants, he would say that it was *absolutely impossible*. It simply could not be! Lord Rayleigh tried to comfort Bose by telling how he himself, as a physicist, had met great opposition from the chemists for predicting a new element. Argon exists, the chemists are silent!

It was a great shock to Bose, this failure of acceptation, this failure to believe. The subtle difference of putting the paper in the *Archives* instead of the *Proceedings* was fully known to him. The news traveled to India of his work being rejected by the Royal Society. He felt he must make a stand for India's sake, for the truth's sake. A plea for extension of leave was made, and at first refused. But the Secretary of State managed it, and Bose privately demonstrated the electric response of plants to three confrères of the Linnean Society. They were boyishly excited, and begged for the paper doomed to the *Archives*.

Bose was modestly happy, and was ill prepared for another shock, the alleged evidence that results similar to his had been obtained by a physiologist in November, 1901, who had seen Bose's experiments in June, 1901. Professor Howes, of the Linnean Society, rooted out all the matter and vindicated Bose, advising him to head his paper with a clear statement of facts, or, ignored, his enemy would take advantage. Bose let his defeated antagonist alone, and as a result was annoyed for over nineteen years by insinuations spread abroad concerning his work.

His work has become known to all, owing to its popularization through general literature, but it is only to the scientist that the beauty of it all is revealed: the growth, the sleep, the death of plants and animals, the wonderful possibilities, truths which mean delight and easement of tired minds, truths demonstrated with his magnetic crescograph, further wonders when he has perfected his microradiometer. For those who fain would read a fairy story, let them get this work of Geddes, who tries so hard to make people understand.

The psychologist, physiologist and physicist can together join and follow Bose into the land of psychophysics, where he boldly shows their common standing ground and predicts great marvels from small things seen: the possibilities of seeing things dreamed of, of hearing sounds of which we now doubtfully catch the faintest murmur. The doctors greatly hope that he has power to unlock many doors now standing so quietly, steadfastly locked in medicine.

His lifelong efforts for a State laboratory seemed so often thwarted, so often hopeless; yet, on November 30, 1917, his fifty-ninth birthday, his Research Institute at Calcutta was standing. He was to have retired in 1915, but the Bengal Government, recognizing his services to the Presidency College and the students, extended his period two years, then gazetting him professor emeritus, on full pay instead of pension. Moreover, he received a knighthood and the companionship of the Star of India, and a Fellowship of the Royal Society in 1920.

All seems well, but for a man like Bose to be worried concerning the financial side of his institute will spoil much good fruit. He has made over all his money, but that is inadequate; research cannot be sustained on applause, nor fame sustained without due study, and study today means costly appliances. It will succeed, but let those who are friends of learning smooth the road a little for the hundreds of Indians who will follow Bose, who, in these sorely catastrophic times, have eyes and ears alert for any slight from the young kingdom which governs the ancient empire of India.

TOLSTOI.

Resurrection. By Leo Tolstoi. Translated by Archibald J. Wolfe. In Two Volumes. New York: International Book Publishing Company, 1920. Pp. Vol. I, ix-337; Vol. II, 398.

The author's task in writing his book is an easier one than that of the reviewer. This is true at least of such books as these two volumes. For in such writings the author is impelled; he is an instrument in the hand of that which must be uttered. It is not alone that he is forced by men and events whose cause he must plead. There may be present a strong conscious purpose to speak for them as the apostle of civic moral regeneration. It is his own spirit, however, that compels him. Upon this external factors play. These are in turn devoured, hungrily followed by the needs, the overwhelming desires, of that spirit. Is it easy to voice these things again in the cold lines of a critical review?

One cannot, however, remain cold as one follows Tolstoi through his pages. Resurrection, regeneration, might be the title of any of his works as he strives to bring men and governments to a sense of their wrong, and to help the men and women at least to discover themselves on a road of newer purpose, truer living. Tolstoi sees about him gigantic injustice. In the writing of this work it is chiefly that of a cruel system of legal condemnation and punishment pursuing its destructive way under cover of apparent protection to society and the safety of those who individually fatten on the spoils of a blindly selfish system.

Tolstoi's heart goes out straight to the individual man and woman who has been caught as a helpless victim of this great machinery of selfprotective greed and ignorance. More pitiable still, even more the object of his call to resurrection, does he find the individual whose innate love of safety and of the comforts of success have led him into the toils of the machine as a part of it. Such a one makes its victims, profits by them, while himself drifting out of the invigorating path of real service out of the exercise of his best nature which he had once set himself as his task.

The hero and the heroine of the story belong to these two groups. He is of the latter class; she belongs to the former group of victims. Around them are the large numbers of men and women who represent all the ways and degrees in which the members of such a nation as the old Russia struggle and suffer, fail or succeed, under the sharply contrasting conditions. Some maintain their own clarity of soul even while they suffer the extremity of injustice which society puts upon them. Some win it out of their sufferings, though marred by the sordid conditions to which they are found. The hero is almost alone in winning back his purity among those whose lot is participation in the workings of the crushing, governing and penalizing machine. And he wins only by escaping from this. For such is its nature that loyal service to it must involve insincerity to one's true humanity.

Incidentally, Tolstoi treats of such unequal distribution of rights and opportunities as lie in aristocratic land holding, the subjection of the common people toward those in power and authority, whether economic or social. The chief theme, however, is the abuse of criminal justice or injustice. Plainly does he lay bare the lack of the most ordinary fairness in the trial and condemnation of prisoners and even of common decency in their personal treatment. These are not figments of the author's imagination, for, aside from the fact that the story takes its origin in an actual occurrence, its detailed matter also comes from known incidents and from actual observed conditions. Tolstoi is pleading not only against unfairness, sin against individual souls and bodies, in this setting forth of facts. He appeals also to society's own commonsense and its interest in its own preservation and health, which evil thus glossed over but undermines. One's heart fails before his truth, and then rebounds with hope as one reads these pages written of Russia some twenty to twenty-five years ago, and turns the pages of Russian history since. But this novel was not written of Russia and for Russia alone. Truth extends further.

The hero and the heroine of the story are not all heroic, or, rather, they have the heroism of reality, the meeting of it in a slow winning of their own individual strength in contact with it. The same might be said of other characters, fellow travelers, many of them on the slow, torturing journey into Siberia. Tolstoi does not write of idealized heroes and heroines. His men and women have the weaknesses and the imperfections of human beings just as they are, also as they fall sometimes under the hardships which meet them, sometimes win a victory because of them. There is many a keen psychological analysis in the book, both of individual characters and of situations which arise. This deep psychological insight pervades also the author's treatment of the members of the society which is the oppressor. Here, as has been said, is infinite compassion for their ignorance, their stupid maintenance of what they have been trained to consider their right and their only protection.

Tolstoi's sadness of heart, his great unsparing mind of truth, at times make his style abrupt and rough, like the road over which the throng of the condemned crowd along to their Siberian exile. He himself grasps for some final personal solution of the problems he presents—aside from his more practical socialistic teachings. The latter he clearly advocates, but then he sets a further solace, a unifying absorption for his hero in the comforting exercise of a religious "business of . . . life." Tolstoi does not explain how the hero worked out his new realization of the gospel, but for him as in Tolstoi's own life "everything he did after that night had a new and quite different significance."

THE STRENGTH OF GOVERNMENTS.

The Four Just Men. By Edgar Wallace, Author of *The Clue of the Twisted Candle, The Secret House,* etc. Boston: Small, Maynard & Co., 1920. Pp. i-310.

This was the title that Gonsalez, Poiccart, Manfred and Thery assumed, and one to which their judges tacitly agreed they had some claim. Their object was to clear out of the way any man who, after being duly warned, persisted in doing that which harmed or impeded the course of justice. The man might be rich or poor, commoner or noble, so when Sir Philip Ramon, M. P., resolved to carry through the Aliens Extradition Bill, in spite of warnings, they slowly prepared for his death, but as openly, so undramatically, that they were thought to be arrogant boasters until they showed such uncanny knowledge of Ramon's doings and sayings that Scotland Yard itself became harassed and totally perplexed, particularly when, the Just Men's threat fulfilled, Ramon killed and Manfred betrayed, he escapes when he is actually on the hangman's block.

> And e'en the ranks of Tuscany
> Could scarce forbear to cheer

the ranks of Tuscany meaning here the readers of such marvelous deliverances.

One of the four is annoyed at being classed with an ordinary murderer. He had not looked at himself in that light. Murderers generally have a personal grudge. The four worked for common humanity against a common enemy, and if the purposed wrongdoing were forsaken by that enemy they had nothing against him.

To incise their justice more deeply on the prejudiced reader, the author in Part Two introduces us to the red hundred, a band of anarchists who would ruthlessly take life, and which numbered world criminals, people of the underworld, past masters of villainous arts. Prepared to meet opposition about holding meetings, they are astonished when informed by the Police Commissioner that in England they may "talk sedition and anarchy till you're blue in the face; you can advocate the assassination of kings as long as you don't specify which king; you can plot against governments, denounce armies and grand dukes; in fact, you can do as you please—because that's the law." Great Britain had hitherto been immune against active work by the anarchists: now they had openly declared war, yet, at the same time, the four just men had declared war on them as including men of the land whom the law passed by, sweaters and debauchers, robbers of public funds, corrupters of youth, men who buy justice as men buy bread. The contrast between the working of the four and the red hundred is strongly brought out. The former utterly break the power of the reds. Their leaders mysteriously disappear, but not before one of them has betrayed, as I said, one of the four.

The story swings along so easily that all the wonderful happenings do not jar, and the question of "killing no murder" will lead the reader into a deep ravine of thought concerning many of the troubles which haggardize society today.

◆

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

THE PASSIONATE SPECTATOR. By Jane Burr. New York, Thomas Seltzer, 1921. Pp. 197.

THE PERTINENT WAGNERITE. By B. M. Steigman. New York: Thomas Seltzer, 1921. Pp. 127.

THE ANATOMY OF THE NERVOUS SYSTEM. From the Standpoint of Development and Function. By Stephen Walter Ranson, M. D., Ph. D., Professor of Anatomy in Northwestern University Medical School, Chicago. With 260 Illustrations, Some of Them in Colors. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 395.

APPROVED TECHNIC OF THE RIDEAL-WALKER TEST. By Samuel Rideal, D. Sc. (Lond.), Fellow of University College, Lond.), Fellow of the Institute of Chemistry and of the Chemical Society, and Captain J. T. Ainslie Walker, R. A. M. C. (T. F.), Fellow of the Royal Society of Medicine, the Institute of Chemistry, and the Chemical Society. London: H. K. Lewis & Co., Ltd., 1921. Pp. 12.

MIS TREINTA Y SIETE DIAS DE AYUNO. (AUTO EXPERIENCIA.) By Dr. Luis C. Maglioni, ex-Cirujano del Hospicio de las mercedes, Ex-Asistente, durante ocho anos, a las Clinicas de Paris, Zurich, Berlin y Londres. Aproposito de los casos de Mr. MacSweeney y de sus 11 companeros, ayunadores Politicos en las prisiones de Brixton y de Cork. "Huelga del Hambre." Buenos Aires: Imprenta San Martin, calle Alsina 459. 1920. Pp. 48.

PRECIS DE PATHOLGIE INTERNE. Par Balthazard, Cestan, H. Claude, Macaigne, Nicolas, et Verger, Professeurs Agrégés des Facultes de Médécine. Secretaire de la Redaction: Balthazard. Tome IV: Systeme nerveux. Cestan, Professeur de clinique neuropsychiatrique (Toulouse). Verger, Professeur de médécine légale (Bordeaux). Troisème Edition. Paris: Masson et Cie., Editeurs, 1919. Pp. 916.

LECTURES ON SURGERY TO NURSES. By Alan H. Todd, B. Sc., M. S. Lond., F. R. C. S. Eng., Author of a *Practical Handbook of Surgical Aftertreatment,* etc.; Orthopedic Registrar, Late Senior Surgical Registrar, Guy's Hospital; Lecturer and Surgeon to the Nursing Staff, Guy's Hospital; Late Surgical Specialist, Lewisham Military Hospital, etc. London: Edward Arnold, 1920. Pp. vii-270.

DERMATOLOGY. THE ESSENTIALS OF CUTANEOUS MEDICINE. By Walter James Highman, M. D., Associate Professor of Dermatology, New York Post-Graduate Medical School and Hospital; formerly Instructor in Dermatology, Cornell University Medical School; Acting Associate Dermatologist, Mt. Sinai Hospital, New York; Adjunct Dermatologist, Lenox Hill Hospital, New York; Pathologist, Department of Dermatology, Vanderbilt Clinic, New York, etc. New York: The Macmillan Company, 1921. Pp. xvii-482.

Practical Therapeutics

THE PRINCIPLES INVOLVED IN THE X RAY TREATMENT OF TONSILS

By W. D. Witherbee, M. D.,
New York.

The tonsil, histologically, is made up chiefly of lymphoid tissue and a connective tissue framework. Pathologically, the cells of the lymph follicles are stimulated to excessive cell proliferation, causing distortion of the crypts and retention of their contents.

The proliferation of cells of the lymphoid tonsil shows a much larger increase in the lymphocytes than in the germinal centre of the follicles. The fibroid tonsil, on the other hand, shows an increase in the germinal centre of the follicles. The germinal centre of the follicle is characterized by the different forms of lymphoid cells all the way from the embryonic type to the mature cell at its periphery. Therefore one finds numerous cells in this area in various stages of mitosis. These pathological cells which are found in the follicles of the diseased tonsil are as susceptible to the effects of x ray as any of the embryonic cells in the body.

The filtered dose of x ray used in this treatment is only about one fourth to one third the dose used in the treatment of ringworm of the scalp in children, hence overcoming the objections of a possible injury to any of the adjacent normal cell structures. The fractional method of dosage given at two week intervals allows the normal cells to recover completely, while the pathological cells, being more sensitive, are unable wholly to reestablish themselves. Thus, by a series of such treatments, the pathological cells will finally be overcome and absorbed.

The decrease in size and smoothing out of the tonsil surface is due to the x ray effects on the lymph follicles as heretofore described. This shrinkage produces an eversion of the crypt, lessens its depth, and relieves the distortion and retention. The fibroid tonsil, the type commonly found in adults, is more amenable to the x ray on account of the susceptibility of the immature cells in the enlarged germinal centre. The infected fibroid tonsil is small in size and on pressure a thin milky discharge exudes, usually containing large numbers of streptococci.

The direct effect of x ray on bacteria when applied to a growing culture is practically nil. In the series of thirty-six cases treated at the Rockefeller Institute, thirty-two were negative to pathogenic bacteria four weeks after treatment, and no change was noticed in the number of cōlonies of the ordinary bacteria usually found on the mucous surface.

Whether these results on pathogenic bacteria are due to the evacuation and drainage of the crypts or to an increased local phagocytosis, we are, at present, unable to discover. These results seem to coincide with those obtained in acne vulgaris. In this condition we have a chronically infected sebaceous duct and gland corresponding to the infected crypt and follicle in the tonsil. Acne vulgaris presents one of the most striking and permanent results in x ray therapy.

We are all aware of the fact that after tonsillectomy in subjects above the sixth and eighth year of life there still remains a considerable and perhaps a vast amount of diseased lymphatic tissue containing pathogenic bacteria. It would seem reasonable to suppose that the effect on this tissue would be the same as that produced on the tonsil, and relieve foci of infection not reached by tonsillectomy.

X ray treatment will be especially indicated in those cases associated with chronic endocarditis, pericarditis, hemophilia, or any coexisting conditions which contraindicate an operation or anesthetic.

For x ray technic and results see the January issue of the *American Journal of Röntgenology,* the *Journal of the American Medical Association,* January 1, 1921, and the *New York State Journal of Medicine,* January, 1921.

DIFFICULTIES ENCOUNTERED IN DIRECT LARYNGOSCOPY.*

By Robert F. Ridpath, M. D.,
Philadelphia,
Associate Professor of Laryngoscopy, Post-Graduate School of Medicine, University of Pennsylvania; Laryngologist to St. Agnes's and Jewish Hospitals.

It is not my purpose to present any new problems in the passing of the bronchoscope or esophagoscope, but to enumerate some of the difficulties encountered in examining patients by this method.

Younger people, or those between the ages of twenty-one and forty, are perhaps easier to examine. When in the teens, nervousness and lack of coordination with the physician are more marked than later in life. In older people we have greater susceptibility to the anesthesia, inability to open the mouth, or form as great an angle, due to a less movable mandibular joint, and the impossibility of flexing the neck backwards as far as is done with ease in younger patients.

Patients with large or elongated teeth give a smaller space for manipulation; the tube causing pressure on the teeth will be a mechanical obstruction which is sometimes difficult to remedy or impossible to overcome. If a small funnel shaped epiglottis is encountered, great difficulty is experienced in thorough cocainization and the insertion of the tube. The same trouble is also met with in the thick cartilaginous and overhanging epiglottis. Hyperesthesia of the epiglottis is sometimes encountered which may necessitate more thorough anesthesia than otherwise. Anatomical configuration of the larynx, illustrated by a highly developed or prominent Adam's apple, may necessitate counter pressure before we are able to insert the bronchoscope or visualize the glottis.

---

* Read at the third annual meeting of the Association of American Peroral Endoscopists, Boston, June 1, 1920.

There is a certain amount of psychological apprehension at the sight of the instruments and the effect of cocaine. Women, however, although attributed with a more delicate nervous system than men, seem to be less affected and are better patients than men. Men are more afraid and, in spite of every encouragement, fear the insertion of the instrument. It is always well to remember, as Brunning has so well phrased, "That it is not the strength of the operator but the resisting power of the patient which must determine the limit to which the method be applied." So, in spite of thorough anesthesia, if through lack of confidence, nervousness, or what not, in your patient, do not force the first examination, but have the patient return and success will reward you at future sittings. Malformations, mediastinal tumors, diseases of the cervical vertebræ, all play their parts in difficulties encountered, and we must always be on the alert. Patients having cardiac lesions with failure of compensation are practically barred from a bronchoscopic examination, first, because of the excitement caused by the examination, and, second, by their inability to stand the local anesthesia. Arthritis occurring in any vertebral articulations precludes a tracheal examination. Aneurysm, dyspnea, or goitre, if large, are all conditions which must be considered in our examinations.

1928 Chestnut Street.

TECHNIC OF SIMPLER AND SAFER TONSILLECTOMIES.

By Samuel Cohen, M. D.,
Philadelphia,
Assistant Instructor in Laryngology, University of Pennsylvania; Assistant Laryngologist and Otologist to the Howard Hospital.

Tonsillectomy is unquestionably the most frequent operation performed. It is supposedly a specialist's operation, but it is done with great frequency by surgeons and practitioners who lay no claim to special tonsillar knowledge or ability. Its improper performance can result in much harm. The operation today, at least in this country, differs from that performed a generation ago, in that we advocate the removal of the tonsil, including its capsule, whereas previously they were chopped off, thus explaining the general idea that tonsils often regrow. It is an almost acknowledged fact that if the tonsil and capsule are entirely removed no regrowth is possible. The operation differs from that performed a generation ago in another respect, that is, from a simple chopping off procedure it has become a difficult complicated operation, requiring special surgical technic, which has aroused dread in the minds of both laity and practitioners. All operators use various kinds of knives, scissors and other implements, which require time in perfecting oneself in their use. The technic is as varied as the number of operators. Each operator gradually acquires a certain technic peculiarly his own. The amount of technical skill necessarily varies, of course, as to the particular method employed, some being so very complicated that much time, energy, and perseverance are required in mastering it. One fact is prominent, on surveying the literature on this subject, and that is that there is no system or rule. Each operator, after many trials and hardships, finds the method best suited to his skill and fancy and soon proclaims this method as the best. Anarchy unquestionably reigns supreme in the tonsillar field. It has been well remarked that this operation, as performed by the majority of operators, shows lack of confidence, lack of simplicity—everywhere chaos.

The supreme and dreaded danger in a tonsillectomy is hemorrhage, and no matter how skillful and careful an operator may be he is not safe from this, the laryngologist's nightmare. The operation as performed by the majority of operators at present is a tedious one, often taking a good deal of time, besides being a very bloody one indeed. Because of this, I have heard physicians say they would rather witness an abdominal operation than a bloody tonsillectomy. One can easily imagine the effect produced on the laity when they are present at a bloody tonsil operation, and, in spite of the fact that they are told it is a very little and simple operation, this dread and disgust is apparent. No wonder some parents and physicians assert that the damage occasioned by the loss of blood does more harm to the child than can be counterbalanced by the possible good the removal of the tonsils may achieve.

Dr. LaForce has introduced an instrument for the complete removal of the tonsil and capsule, which does not necessitate a laborious, time taking technic and the hemorrhage is almost nil. Dr. Skillern, of Philadelphia, has modified this instrument, improving it in a good many respects, although the essential principle underlying both is the same. (My only objection to this instrument is that it is a little too large.) This modified LaForce instrument is the one I use, and I am sincerely grateful to Dr. Joseph I. Smith, who permitted me to inaugurate its universal use at the Howard Hospital. Permit me to enumerate a few of its favorable points, demonstrating why all operators, whether expert laryngologists or occasional operators, should, as far as possible, use this instrument or one made on the same principle.

1. The tonsils may be removed *en masse,* capsule included, in at least ninety-nine per cent. of all cases in children, with the loss of only a few drops of blood, or, more properly speaking, blood stained mucus. In only one case out of about eight hundred operations with this instrument I was called back to stop a tonsillar hemorrhage and in that case a little pressure in the sinus tonsillaris checked it completely.

2. There is no danger of injury to either anterior or posterior pillars or uvula. An examination of throats operated upon by the several hundred different methods in vogue today will show the enormous frequency with which these structures are injured.

3. Rapidity. The operation can be performed in about two minutes, and if one wishes, for better hemostatic effect keeping the blades on another minute or two is sufficient. A point of little importance, but still not to be overlooked, is that the method employed in using this instrument can be taught with a few demonstrations. Anyone can become an expert in its use, no lengthy technic, no special skill, and no extraordinary care being required.

4. With this instrument the removal of tonsils can easily become a home operation, and can be done in the presence of the nonmedical. The only objection the parents may have in witnessing the operation is that it is done so quickly and looks so simple that the parents feel they are not getting their money's worth. I have never had any difficulty in removing tonsils in children, no matter how small or how deeply buried they may have been.

Another advantage that should not be overlooked, which is of rather more importance than may appear at first glance, is that the operation may well be done under semianesthesia, thus lessening ether risks. It has been a frequent experience of mine to have the anesthetist say: "Doctor, this child has some heart lesion," or "That child is taking ether badly; please hurry the operation through." In such instances, the entire operation may be done in about one minute. This rapidity can be accomplished by anyone.

While strongly advocating this instrument or any instrument based on these principles, and knowing that in the vast majority of tonsil operations it is the best method to employ, it is very important for each operator to perfect himself in some dissection method, as there are a fair number of cases, and these in adults only, where this instrument does not give good results and the dissection and snare must be resorted to. I have tried it for local tonsillectomies and found it unsatisfactory, so have abandoned it.

It seems to me that this instrument, or any instrument based on the same principles, should be adopted by all operators, thus bringing order out of the present chaos in the tonsillar field, ease out of difficulty, and safety out of many possible dangers.

2523 South Broad Street.

A NEW HEALING AGENT

By Isidor F. Shapiro, M. D.,
New York.

It was demonstrated several years ago that inflammation could be healed by fluorescent substances, if exposure was made to light for superficial sites, and to x rays for deep locations. It has also long been known that radium could excite *in vitro* the luminescence of such substances, but, to my knowledge, the application of radium to this method of treatment *in vivo* is new, and is here suggested as worthy of investigation.

Eosin, in one per cent. concentration, is the dye that has hitherto proved probably the most successful in this method. (Alcohol must be added to about ten per cent. in order to dissolve the eosin in water.) The radium emanation required is almost infinitesimal, and therefore not capable of doing harm; only a few millicuries, using as little as will barely cause luminescence of the eosin solution. (Perhaps it would be desirable to add one per cent. of fluorescein to the eosin solution.)

In view of the case reports in the literature of the remarkable success of a one per cent. eosin solution when exposed to light rays, this suggested combination should find a wide field of application. On the one hand, it would not be limited to superficial situations, as when light is used on the eosin, and, on the other hand, it would dispense with the danger, expense, and cumbersomeness of utilizing x rays to excite the eosin in deep locations, such as the paranasal sinuses and deep fistulæ.

355 East 149th Street.

Antihemorrhagic Serum.—H. Dufour and Y. Le Hello (*Presse médicale,* January 12, 1921) report further clinical experiences with their serum against hemorrhage, which they term anthema. The serum used is that of rabbits in a state of anaphylactic sensitization, such serum having marked coagulant properties from which the human patient suffering from hemorrhage derives marked benefit. The serum is generally injected in the buttock, the first dose being ten to twenty mils. Where hemorrhage recurs or does not yield to the first injection, further injections up to sixty mils or more, are given. In addition to being useful in patients actually bleeding at the time, it has also been administered prophylactically by surgeons to reduce hemorrhage in operations on structures with an abundant blood supply, as in the region of the liver, and in bleeders. For such purposes ten mils are injected on the preceding evening and on the morning of the operation; good results are reported from this procedure. Use of the serum is indicated in hemorrhage from the nose, gums, stomach, intestine, uterus, or kidneys, and in all disorders tending toward the production of hemorrhage. Successful results were obtained in many cases of hemoptysis.

Latent Mastoiditis.—H. Luc (*Presse médicale,* January 19, 1921) holds that the symptoms commonly given in textbooks as signifying mastoiditis are more strictly indications not only of suppuration but also of retention of pus in the mastoid antrum. Where there is no hindrance to the exit of the pus into the tympanic cavity these symptoms need not necessarily appear. Abstention from operation in spite of a definite suspicion of participation of the antrum in middle ear suppuration not only allows the ear discharge to continue indefinitely but also exposes the patient to the danger of infection of the lateral sinus or of the meninges and brain. Whenever, in a case of acute otitis treated from the start by free paracentesis tympani, suppuration persists undiminished beyond the third or at most the fourth week, it is the physician's duty to warn the patient that, while it is not impossible that the discharge might eventually stop of itself, such a result would probably be long delayed, and that in the meantime the patient is exposed to extremely serious complications. On the other hand, prompt opening of the antrum would not only eliminate this danger but also quickly put a stop to the discharge. Where, in spite of the warning, the patient continues to refuse operation, the responsibility of the outcome of the case should be placed wholly upon him. Apart from prolonged persistence of free discharge, another indication of latent mastoiditis is that suggested by Cubet-Barbon: Where, after the drum has been freely opened, thoroughly washed through the meatus, and its fundus carefully dried, a droplet of pus at once reappears at the opening, suppuration in the mastoid antrum is suggested.

Indications for the Removal of the Tonsils.——J. H. McPhedran (*Canadian Journal of Medicine and Surgery,* June, 1920) quotes from St. Clair Thomson the following conditions as indicating the removal of the tonsils: 1. Any interference with respiration, night or day. 2. Threatened alteration of voice or articulation. 3. Eustachian catarrh, or the presence of any middle ear affection. 4. Chronic enlargement of the cervical glands. 5. Chronic lacunar tonsillitis, or cheesy collections in the supratonsillar fossa or between the tonsil and the pillars. 6. If adenoids are present, and are to be operated on, the opportunity should be seized to remove any decided tonsillar hypertrophy. 7. For attacks due to septic absorption through the tonsils, or a chronic state of illhealth, which can be attributed to infection through the tonsillar area. 8. Frequent attacks of tonsillitis. 9. Peritonsillar abscess. He maintains that they should not be removed as a preventive measure in a child, lest tonsillitis, poliomyelitis, arthritis, or an endocarditis develop, because it has not been proved that the tonsil is the only channel of entrance of infection, and it has been proved that chorea, arthritis, and endocarditis develop when the tonsils are out. They should not be removed from a child because of one attack of tonsillitis, but the tonsil should be given a chance to return to normal. The tonsils should not be removed during an acute attack of tonsillitis; as a general rule not before the age of fifteen from bleeders; in diabetes; in chronic deforming types of arthritis; solely because they are enlarged, or detritus is seen in the crypts; in malignant disease and arteriosclerosis.

Use of Ouabain in Heart Disorders.—Jean Minet (*Gazette des praticiens,* January 1, 1921) reports clinical experiences which lead him to subscribe to the recommendations of Vaquez and Lutembacher as to the use of ouabain in preference to digitalis in certain types of heart disorders. The usual procedure is to inject one fourth of a milligram of Arnaud's ouabain intravenously on the first day and half a milligram on the second and third days. One of the types of cases in which ouabain is indicated is that of acute cardiac insufficiency with dilatation, as in cardiorenal patients. In these cases there is sometimes pulmonary edema and at others an anginal attack. Venesection is appropriate, followed by ouabain, which is repeated once or twice. Usually within a few hours pain and dyspnea diminish and the fluid in the lung is reabsorbed; the blood pressure rises and general edema, if present, disappears. In acute dilatation of the right heart, such as may follow undue exertion in mitral disease, especially in women, during pregnancy or labor, the disturbance comes on so suddenly that digitalis has no time to act, even if given intravenously; in such cases ouabain brings rapid relief. In progressive cardiac insufficiency in heart cases, when digitalis has lost its efficacy, ouabain gives immediate results and tends so to influence the myocardium as to restore its sensitiveness to digitalis. Ouabain is likewise indicated in cases of mitral stenosis or occasionally regurgitation, accompanied by paroxysmal pains along the upper part of the scapula and attacks of tachycardia which are the forerunners of complete arrhythmia; also in mitral cases with paroxysmal bradycardia, due probably to changes in the bundle of His, in which variety of case digitalis is contraindicated. Ouabain is itself contraindicated in cases of cardiac cachexia with general infiltration of serous membranes, inflammatory lung complications, marked albuminuria, and anasarca. It should not be given where chronic nephritis with marked albuminuria accompanies heart disease. Even in the absence of albuminuria, it should be used cautiously where there are signs of urea retention. It is also contraindicated in infectious endocarditis, whether acute, subacute, or chronic.

Sodium Chloride Concentration in the Blood and Urine.—A. Pruche (*Presse médicale,* January 12, 1921) asserts that the concentration of sodium chloride in the blood is always maintained at a constant level under both normal and abnormal conditions. Where there is chlorine retention there is also always retention of water, in order to maintain isotonicity of the blood serum. The chloride concentration and output of urine in a given period of time are merely the result of a reaction in the blood having for its object to maintain a constant balance between the water, chloride, and dry residue. It is only necessary to inquire whether this balance is obtained under any conditions as regards the output and concentration of the urine. By discarding the urine as a useless factor, one eliminates *ipso facto* the correction for extravascular balance and the investigation of the threshold of excretion. Whenever the concentration of chloride in the dry residue of the serum is found increased, treatment and especially the diet for salt removal should be instituted at once, without waiting until visceral and peripheral edema sets in. This increased concentration of chloride in the dry residue, which precedes edema frequently by a long interval, is the sufficient and necessary peculiarity of retention of chlorides in the blood.

Treatment of Gas Bacillus Infections in Civil Practice.—Ernest L. Hunt (*Boston Medical and Surgical Journal,* April 15, 1920) says that preventive treatment obviously begins with the one who renders first aid. Great service may be rendered by cutting away clothing, lightly applying a clean dressing to protect the wound, and supportive splinting, but grave harm may be done by reducing a protruding bone, or applying a tourniquet or splints unnecessarily or too tightly. At operation the bacteriological condition of the wound should be determined by swabbing the interior and having smears stained and examined at once. The presence of Gram-positive rods and their relative numbers should warn him as to his procedure, though their absence should not wholly allay his fears. Cultures should be made and inspected for gas in six or seven hours. The surgeon must then thoroughly cleanse the wound, lay it open freely, remove all foreign matter, cut away traumatized skin fringes and muscle ends, ascertain condition of blood supply, being very careful to avoid important trunk vessels, and preserving such bony fragments as are well attached to periosteum and are needed to establish continuity of the repair process. Attention to muscle ends is of first importance; they should be trimmed down to healthy tissue. It is necessary to get into all recesses of the wound and clean it up. Carrel-Dakin tubes wound with gauze should then be inserted to the innermost recesses and retained by an occasional fine catgut stitch, the rest of the wound packed lightly with gauze, strips of gauze soaked in sterile vaseline should be applied to the skin, covered by a liberal, soft, absorbent dressing, and wire hammock splints used if available, avoiding undue constriction at any point. Probably it is best to use Dakin's solution by hourly flushing. Inspect limb at least every four hours, and remove dressings if any bad symptoms appear, or culture shows gas production. Take smears daily from inside wound for bacterial count.

After the disease has developed the treatment is operative, and the type of operation must depend upon the stage the disease has attained. The choice of operation requires nice judgment on the part of the surgeon. If the disease be discovered in the early, local stage, the procedure should be free opening of the involved areas with careful anatomical separation of fascia layers down to the bone, avoiding major circulation channels, and excising all devitalized muscle, which can be recognized by its brick red color, friability, and failure to contract when pinched or cut. If not recognized until the explosive stage, when the limb is massively swollen, crepitant, and discolored, the wise operator will amputate above the involved areas.

Intestinal Parasites in Digestive Pathology.—Marcel Labbé (*Bulletin de l'Académie de médecine,* January 4, 1921) states that relatively little is as yet known concerning the disturbances of function which various parasites cause in the alimentary tract. In addition to disturbance due to infection, parasites cause irritation which reacts on the abdominal nerve plexuses and produces symptom groups simulating various painful disorders in the abdomen, such as hepatic or pancreatic colic, appendicitis, gastralgia, hyperchlorhydria, and gastric ulcer. Irritation and penetration of the mucous membrane by certain worms give rise to acute or chronic inflammatory states appearing in the form of enteritis, colitis, or appendicitis. Digestive disturbances due to worms may be very frequent, and consist in abdominal discomfort or pain appearing at irregular intervals, with alternate diarrhea and constipation, subfebrile temperature, and loss of weight. Treatment by ordinary measures fails, and recovery occurs only after expulsion of the parasites with suitable remedies. In other instances the parasites cause an obstinate chronic colitis with repeated attacks of diarrhea of a bilious or dysenteriform type. Tenia sometimes induces typical manifestations of hyperchlorhydria, with late pains, preservation of the appetite, and loss of weight such as to suggest gastric ulcer, until finally the expulsion of segments of the worm led to proper diagnosis and treatment. Persistent pinworm infection may cause repeated attacks of pain suggesting appendicitis, the appendix being found to contain numerous worms when removed; subsequently hepatic colic may seem present, until ultimately anthelmintic drugs are used and the monthly painful attacks overcome. The author has seen threadworms cause symptoms so severe as to lead to apprehension of cancer of the pancreas. The stools should always be examined for parasites or their ova in long standing dyspepsia. To gage the intensity of the infestation, it is well to count the number of ova in a known amount of feces. Treatment should be intensive and prolonged. Large parasites, such as tenia and ascaris, are rather easily got rid of, but the smaller ones, viz., ankylostoma, oxyuris, and trichocephalus, are obstinate. Thymol and calomel are the most active remedies; but repeated treatments, sometimes extending over months, are required to cure, and even with prolonged treatment, in some cases the result obtained is only a remission in the parasitic infestation.

Treatment of Acute Gastroenteritis in Infancy.—S. C. Gutierrez (*La Pediatria Espanola,* December 20, 1920) is against the administration of purgatives, such as castor oil, in either the acute or the chronic form of gastroenteritis in infants. Rectal irrigations, first employed by Monti, have been almost given up by the writer, their sole indications being rectal tenesmus or the necessity for the rectal administration of opium. Hydrotherapy, in the form of sponge or full baths, is sometimes of value, as are also hot compresses.

Intestinal antiseptics have also fallen into disuse, not so much, in Gutierrez's opinion, on account of their somewhat exaggerated danger, but mainly because of their failure to help the little patient. The best method of intestinal antisepsis is to put the intestinal mucosa in a condition where it will regain its normal resistance against invading bacteria.

As to astringents, they are of service when the occasion is opportune and the dose correct. Any astringent may increase toxemia if it is given in the active acute stage; it must always be merely an adjuvant to a dietetic regimen, and only in the rarest instances can it, *per se* cure diarrhea.

Bismuth subnitrate, dermatol, tannin, tannigen, oxide of zinc, gelatin and many other agents give good results when used propitiously as to time and dose, but their action can never be compared to that of opium. The diet is to be watched with the utmost care and increased with the greatest caution, and, later on in convalescence, the administration of tonics is indicated.

Treatment of Malignant Bladder Disease by Radium.—Clifford Morson (*British Journal of Surgery,* July, 1920) states that little has been said about the dose of radium, the aim being rather to discuss when and how it should be used in the treatment of malignant disease of the bladder and male genital organs. With the experience gained in recent years of the effect of radium upon malignant disease, there is one outstanding fact—radium is local in its action. The removal of a growth by radium does not ensure an immunity from recurrence in other parts of the body. The experiments on mice, which showed that the cancer cell when irradiated with a sublethal dose had the power to confer immunity against the same strain of tumor, have as yet failed when put to the test in the case of human malignant disease. It is the type of growth which rarely gives rise to metastases that is most successfully treated by the rays of radium. Therefore in malignant disease of the bladder and prostate a good result may be expected, provided the remedy is applied with care and exact knowledge of the effect of irradiation upon normal tissue.

Proceedings of Societies

ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

Third Annual Meeting, Held in Boston, Mass., June 1, 1920.

The President, Dr. JOHN W. MURPHY, of Cincinnati, in the Chair.

Qualifications a Peroral Endoscopist Should Possess.—This is the subject of Dr. Murphy's presidential address, which is published in full on page 451 of this issue.

Traction Diverticulum of the Esophagus.—Dr. H. ARROWSMITH, of Brooklyn, was unable to attend on account of illness, and his paper was not read. Dr. Henry L. Lynah, of New York, showed several lantern slides, illustrating a case of traction diverticulum of the esophagus. One slide showed a traction diverticulum with malignancy which perforated through her bronchus; two slides showed what was thought to be traction and propulsion diverticulum in tuberculosis, and another showed diverticulum pulled over to one side, the pleura pulling the esophagus out of position. This turned out to be a case of tuberculosis, not malignancy. Dr. Arrowsmith's paper appears on page 463 of this issue.

Dr. H. P. MOSHER, of Boston, said he had one specimen of traction diverticulum at the museum, which was the only one he had seen.

Dr. LEE W. DEAN, of Iowa City, Iowa, said that two weeks previously he had seen a case of traction diverticulum. As was usually the case, it was an accidental discovery. The patient came complaining of difficulty in swallowing. An examination was made to see if there was a stenosis of the lower pharynx. The patient had a kyphosis of the cervical portion of the spinal column. The stenosis was found, and just above it was a marked traction diverticulum. In this instance it was due to the infection about the bodies of the vertebræ extending to the wall of the pharynx, and the resulting scar tissue pulling the funnellike cavity in towards the spinal column.

Dr. Mosher said he thought there should be more of these diverticula from tuberculous glands surrounding the esophagus. The more carefully they were examined the more one would think there would be involvement of the esophagus with pulling of the esophagus out of place with projections, not large enough to be diverticula, but projections produced by these tuberculous glands.

Dr. WILLIAM B. CHAMBERLIN, of Cleveland, said he would like to know how one could make a differential diagnosis between a traction diverticulum and a pouch. Dr. Mosher replied that they never occurred in the same place; as far as he knew a pouch always occurred higher up.

Dr. THOMAS HUBBARD, of Toledo, said that in the study of diverticula he thought the string guide method was very useful. In other words, if any fluid went through into the stomach it was easy to get the silk twist through; and when it came to the study of a case with the esophagoscope he had a ready way of locating the lower orifice and that was particularly useful if an attempt was to be made to dilate the lower orifice. He thought that added an element of safety to the study and became a factor in the treatment. All were familiar with the string guide method. It took forty-eight hours to get the silk twist firmly anchored in the intestines, and then with traction on the string one had a direct positive guide through the orifice to the lower esophagus.

Dr. SIDNEY YANKAUER, of New York, said that Dr. Hubbard's remarks reminded him of a case in which he felt that he would be helped out with the string, but had a great deal of difficulty. This was a peculiar case, not a diverticulum but a spasm of the esophagus. This patient was on the surgical side of the hospital, where a diagnosis of carcinoma of the esophagus was made because the radiograph showed a bulging and a narrower one through which the bismuth paste trickled slowly. The chest was opened with the idea of opening the esophagus, but when it was brought to view, it was found to be a perfectly normal esophagus. The surgeon had the esophagus between his fingers and could tell it was normal. The patient recovered from the operation and then was turned over to Dr. Yankauer for study. In the meantime gastrostomy had to be done because the patient could not swallow, and a string was put down all the way through. Dr. Yankauer said he tried to esophagoscope the patient by passing a string, but it was absolutely impossible to get beyond this one point because there was a tight spasm in the middle of the esophagus and the parts above were so lax that they would be pushed off into the lateral border of the esophagus and carry the string with it. There was no actual dilatation of the esophagus. It was impossible even under local anesthesia to pass an esophagoscope beyond this spasm. Under general anesthesia the spasm was relaxed, and the esophagoscope was passed without the slightest difficulty. Finally, Dr. Yankauer said, he took a flexible wire and passed that down through the gastrostomy wire, and when he got a stiff wire through and was able with difficulty to get the esophagoscope past the spasmodic point, the string helped. But the string alone was not sufficient to pass this tight stricture about the middle of the chest.

Dr. LEE W. DEAN, of Iowa City, Iowa, said that in the case he had mentioned the string always went down through the opening, and an x ray plate was so characteristic, the radiologist thought, that he insisted that this funnel should be more marked than it was.

Dr. Thomas Hubbard, of Toledo, said he wanted to speak about the use of the string, especially in malignancy. He was convinced that by the string method, retaining the string *in situ*, the patient could be fed with safety by tube even in the late stage of malignancy. He thought that this method was better for the patient, and did away with the extra surgical risk of the gastrostomy.

Dr. William B. Chamberlin, of Cleveland, said that Dr. Hubbard's suggestion of the use of the string was especially successful in a recent case he had seen of esophageal pouch. He endeavored to pass the esophagoscope into the esophagus, but was unsuccessful, the instrument going into the pouch each time. Subsequently he had the patient swallow a string, and then he introduced the esophagoscope over the string and was able to enter the esophagus without difficulty. The patient was subsequently operated upon with good results by Dr. Crile. Dr. Chamberlin said he did not know whether the method was new, but he suggested doing a combined operation to Dr. Crile; that is, while he introduced the esophagoscope into the pouch, Dr. Crile should open the neck at the same time and allow the pouch to be presented into the wound with the tip of the esophagoscope, thus making it much easier for the surgeon to dissect the pouch and get down to the normal lumen of the esophagus. Dr. Crile's objection to this was that it would be difficult to administer the anesthetic, owing to the presence of the tube in the mouth; but Dr. Chamberlin did not think the objection held. He thought the method was a good one, and that it could be worked out satisfactorily. In this case the esophagus was normal, but one could not find the opening. Perhaps Dr. Mosher could have done so with his ballooning method. He had not been able in this case to use the ballooning method, but the string method succeeded very well.

Dr. Samuel Iglauer, of Cincinnati, said that in regard to the question of anesthesia with the presence of the tube, he wanted to refer to the fact that it was possible to introduce two tubes, one in the esophagus and one in the trachea, and that the patient might be anesthetized through the tracheal tube. He reported such a case to the society last year. There was room in the mouth for an esophagoscope and a bronchoscope at the same time.

In answer to Dr. Lee W. Dean's inquiry as to whether the intratracheal method of anesthesia was used, putting the rubber tube through the nose, Dr. Iglauer said that a bronchoscope had been introduced through the mouth and the anesthesia continued through the bronchoscope; that is, holding the anesthetic at the distal end of the bronchoscope. This patient had a stricture of the pharynx which prevented the introduction of an esophagoscope without cutting off the air; but by introducing both tubes it was possible to give an anesthetic and continue the esophageal manipulation.

Dr. H. P. Mosher, of Boston, said that it seemed to him there should be more strictures of the esophagus due to tuberculous glands. The lower half of the esophagus was often imbedded in them. When they became infected and broke down the healing could readily produce a stricture. In examining tuberculous bodies it was not uncommon to find the lower half of the esophagus very irregular and studded with small projections. The use of the guiding string was well established in esophageal surgery. He said that he was using it less and less, however, finding more certainty in the employment of ballooning. In inserting the feeding funnel in cases of carcinoma the string replaced all other methods.

Stricture of the Esophagus.—Dr. Thomas E. Carmody, of Denver, presented this paper, which is published in full on page 427.

Dr. H. P. Mosher, of Boston, said he was especially interested in Dr. Carmody's account of embryology and comparative anatomy. He felt that from such studies we could get new light on the variations of the esophagus. Dr. Carmody had given him too much credit. All the tables in the article quoted were appropriated from others. Dr. Mosher said he was startled when Dr. Carmody said that it was not justifiable to remove a specimen in cases of carcinoma of the esophagus. It had been his custom to do this, and not only this, but to curette away projecting masses of carcinoma before using radium. Radium, as he had used it, had been ineffectual. The danger in its use was that too strong a dose would set up a peritonitis. Dr. Green had of late been planting radium seeds in the growth. This was probably a step forward.

Dr. D. J. Gibb Wishart, of Toronto, mentioned a case of atresia of the esophagus in an infant who lived only a few days, and showed a specimen from the case. There was an opening from the stomach into the trachea and a piece of glass passed through this. It was a congenital defect, and the infant lived only a few hours after birth.

Dr. Lee W. Dean, of Iowa City, Iowa, said he would be glad if Dr. Carmody would elaborate a little more on the expression that he used, namely, that malignancy of the esophagus could be successfully treated by the use of radium. He thought we get a wrong impression as to what he meant.

Dr. George F. Keiper, of Lafayette, Ind., touched upon one or two points in the diagnosis of strictures of the esophagus. He believed that it was necessary to take two x ray plates of such conditions; one laterally and one anterioposteriorly. Each gives information that the one would not convey even though the plate was taken diagonally. This was illustrated in a case of a lye burn stricture that he reported last year before the Midwest Section of the American Laryngological, Rhinological and Otological Society, where the lateral view gave an entirely different idea of the stricture than that obtained from the view anterioposterior, and thus very materially helped us in the treatment of the stricture.

Again in some strictures of the esophagus it was absolutely impossible to dilate the stricture without the esophagoscope in place to guide the bougie of the operator. Blind bouginage was always dangerous and often resulted in perforation of the gullet. There was no warrant for such procedure at all. But it was not always necessary to pass the esophagoscope in order to dilate strictures, especially in adults. In such cases after he had made his examination with the tube, he was likely to have the patient swallow slowly about six yards of stout silk as suggested by Mosher, and when the caught end was firmly held in place by stomach and bowels, the perforated sounds of Plummer were threaded on the end sticking out of the mouth. Then if the silk thread was held taut in passing the bougie into the gullet it could not go anywhere else than through the stricture, for it must follow the thread.

Again, it might be impossible to pass the string cutting esophagotome of Jackson. Dr. Keiper said he had failed in its use because it was a stiff instrument. Where he had failed he had adopted this procedure: By perforating the steel staff of a Jackson Guisez instrument just where it was joined to the flexible end, the flexible end could be made to pass the stricture, and with a string threaded in the perforation the stricture could be cut by drawing the string back and forth. In the treatment of stricture of the gullet, haste in diagnosis was to be deprecated. In but few cases was haste justifiable. Plenty of time should be taken to get good plates, and then carefully examine with the illuminated instrument the site of the lesion, dilating when the site of the stricture was reached under direct inspection; in children the esophagoscope should always be passed as the preliminary to dilatation.

Dr. Joseph C. Beck, of Chicago, said he thought that the use of radium, the size of dose, the infiltration of certain rays, should be discussed, but the fact of the matter was that only in parts like the larynx, nose and the pharynx, that were practically confined to our field, had the laryngologist become also the radiumologist. In all other fields it seemed the radium expert applied the treatment, but in this field the radium expert was not as well qualified to apply the treatment, at least not in the larynx and in the esophagus, as was the endoscope expert, that is, the endoscopist.

Dr. Beck said that the radium he used contained twelve and a half milligrams of pure radium in the needles. The needles were of different length, the radium was in the point of the needle, twelve and a half milligrams of radium protected by the thinnest material, aluminum, silver, depending on what screening was required—the thinnest amount, one tenth millimetre, covering over this radium, was all that separated the rays of radium which were contained in this tip. These needles were sharp pointed and contained a little eyelet and through this eyelet was passed a flexible wire. That was the anchorage that you used so that it could pass down and not get lost. The esophagoscope was passed down to the growth and then by means of the forceps it was pressed into the tumor. The idea of the needle was to prevent the conditions of burning, because it was pressed into the substance of the tumor itself and never in the normal tissue, and then we get the radiations in all directions rather than from a capsule or a plaque from one side. It was figured that in the application of radium four of these needles were used as a rule; that meant fifty milligrams of pure radium for six hours. Multiply that fifty by six, and the amount was expressed in millicuries, the expression that was used. Fifty times six millicuries would be recorded in your record.

Dr. Beck said he had used it in six cases of carcinoma of the esophagus proved by microscope. He had used it in these cases of quite progressive esophageal carcinoma in the upper and lower portion of the esophagus in four and five treatments. In the first case, where the carcinoma was in the upper portion, after five treatments of the application of these needles the patient was able to swallow liquids fairly comfortably which he had not been able to do before that. Cases where the carcinomas were in the lower portion were still under treatment. One of them had had eight seances, and the other three. This was new work, and further observations were necessary. Care should be taken to allow plenty of time before stating that a cure had been effected.

Fluoroscopic Bronchoscopy, Esophagoscopy, and Gastroscopy.—Dr. R. C. Lynch, of New Orleans, read a paper on this subject, which is published on page 437.

Dr. Chevalier Jackson, of Philadelphia, said it seemed to him that Dr. Lynch had struck the keynote in regard to the use of the fluoroscope in connection with endoscopy. There were two kinds of bronchoscopy in his mind, one was safe and the other was dangerous. When every step was watched with the eye at the tube we had safe bronchoscopy, but in using fluoroscopy many dangers were encountered. It seemed to him that the safest procedure was for the endoscopist to look through the tube, at least while he was doing something; he could intermittently look over at the screen occasionally to obtain needed information, but it seemed to him that when doing anything he should be looking through the tube while the fluoroscopist, looking at the screen, told him to go deeper or sidewise or at an angle. He considered the most dangerous part of fluoroscopic bronchoscopy was where someone unfamiliar with bronchoscopic methods introduced the bronchoscope and forceps which he watched through the screen. The most dangerous tissues were the bloodvessels, and they were invisible in the fluoroscope. The surgeon could see the foreign body and could grasp it, but between the two might be large transparent bloodvessels to rupture which might kill the patient on the table. When the matter was first approached by Dr. Ingals a number of years ago, Dr. Jackson had questioned the advisability of publishing very widely fluoroscopic bronchoscopy lest it should lead men totally inexperienced in bronchoscopy to go in and work in the blindest kind of way, with an inevitably large mortality that would undeservedly discredit bronchoscopy. He said then, and he still thought, that the fluoroscopic work should be strictly limited to the class of cases that Dr. Lynch had mentioned where small foreign bodies were in the tissues or far out in the periphery. In all cases of foreign bodies in any but the smallest bronchi, working with the eye at the tube controlling every movement of the forceps or other instrument was not only a vastly safer method, but it was infinitely more successful.

In regard to open safety pins in the stomach, they had frequently passed through the intestinal tract and out through the rectum. Dr. Jackson's advice had always been, until recently, to watch and wait; but during the past winter a baby under one year had been sent to him in whom a safety pin had been watched in the stomach for seven weeks. If he had seen it earlier, he would have felt justified in watching it for that length of time. However, after a symptomless interval of seven weeks, the temperature shot up to 106°. A radiograph was taken and it was found that the safety pin after having been in the stomach for a month had been regurgitated into the esophagus and the point had perforated the anterior wall of the pericardium. The patient had a rapid pulse, was very restless and looked ill. Everything indicated a serious, perhaps a fatal outcome. Dr. Jackson removed the safety pin without anesthesia, general or local. The temperature went down immediately to normal. In view of this case he felt that there was justification for doing as Dr. Lynch sanctioned in his case—having the surgeon make an external opening and removing the safety pin through the stomach wall if it was thought best for the patient. In the case of a large safety pin in a child it was needless to wait. If it was small, it was safe to wait. But the chances were nearly equal so that anyone was justified in sanctioning gastrostomy for a foreign body that would not pass if gastroscopy had failed. So far, he had been able gastroscopically to remove foreign bodies from the stomach in some cases, but other cases had been so difficult that he expected to fail in a certain percentage of future cases.

Dr. Richmond McKinney, of Memphis, Tenn., said that those who were not very skillful would say that all bronchoscopies were dangerous, but fluoroscopic bronchoscopy appealed to one who was not as skillful as Dr. Jackson. He had had a number of cases where he had used the fluoroscope and removed the foreign body where he could not use the bronchoscope. He recalled a case in which he had endeavored to get at the brad but by looking through the fluoroscope he had managed to pass it over to one side. He thought that the use of the fluoroscope made it simpler. All one had to do was to look down through the fluoroscope, pass an angular forceps and extract it. It was too simple. He said that by the use of the fluoroscope he had never seen a foreign body he could not extract.

Dr. Wolff Freudenthal, of New York, said he considered the fluoroscope a very important addition to the armamentarium of the nose and throat surgeon. Of course Dr. Jackson was right that there were dangers in bronchoscopic work. In 1910 Dr. Freudenthal described a case in which he had had some difficulty in removing a penny from a child's esophagus by the usual method. According to the suggestion of Dr. Francis Hugo he had used the fluoroscope and it did not take three minutes to get the foreign body out. It was the simplest thing he had ever seen, and he did not think there were many dangers in esophagal work.

Dr. Thomas E. Carmody, of Denver, believed that one should not be trying to look through the fluoroscope while looking through the bronchoscope, and there was a possibility in passing the forceps that the röntgenologist in looking through the fluoroscope might not be in the right plane to see the grasp of the foreign body. He recalled the first case he had had of this kind when he did not think it was well to use the fluoroscope because a man had failed twice, and he could see the tack perfectly, and in grasping it the röntgenologist said that he was above it. However, in looking through it he knew that he had the tack grasped, as Dr. Jackson said. But when he began to make traction on the tack, the röntgenologist said that it was coming. So it had helped a great deal. He had used it in one case in which there was a tooth in the pleural cavity where it had not helped and he had used it in the case of a tooth in the bronchi where it had helped.

Dr. Thomas H. Halsted, of Syracuse, N. Y., said that the first esophagoscopy he did was in a child in which a penny had been swallowed soon after birth. It had been there for four years. He attempted to remove it under fluoroscopy. It seemed to be the easiest thing to get it, but he had failed. The forceps went down to the foreign body but because it was encysted, it could not be grasped. He then did an esophagoscopy and found that the penny was imbedded, and not until carefully curetting the wall was he able to remove it through the esophagoscope. In such a case it would be dangerous to attempt removal blindly, i. e., in the case of an imbedded or encysted foreign body.

Dr. Thomas Hubbard, of Toledo, said that there was one emergency in which the fluoroscope was absolutely necessary, and that was in shifting foreign bodies. For example, the case of a man in whom a tack was plainly visible by fluoroscope in the right bronchus at the first examination. Bronchoscopy failed to locate the tack in right or left bronchus and he concluded that the man had coughed it up and swallowed it. The fluoroscope was not available in the operating room at that time. The next day the tack was in the lower left, and a second bronchoscopy failed to find it. It was in neither main bronchus. On the third examination the fluoroscope was available. The tack was in the lower right. Tracheotomy was done and when the tube was in the lower bronchus it was found, by the fluoroscope, it was an inch below the tack. The tack was in the upper right bronchus. In other words, it is probable that the tack had shifted each time into the upper right bronchus. With the aid of lower tracheotomy it was possible to straighten out the angle, and by double plane fluoroscopy it was possible to place the lower end of the bronchoscope exactly opposite the opening of the upper right bronchus and then with the aid of a short angle curved forceps to grasp the point of the tack. The propriety of the use of the fluoroscope became very evident right there because one was not sure after closing forceps whether he had a portion of the mucosa or the foreign body. By very slow, careful traction the tack was drawn out of the bronchus, gradually straightened, drawn into the tube and extracted. In that class of cases the fluoroscope was absolutely essential.

Dr. Emil Mayer, of New York, said that these foreign bodies were usually in young children and consisted usually of coins and buttons, and there was never any danger from trauma in removing them. He had taken a safety pin out by the same method by simply taking up the border.

Dr. John W. Murphy, of Cincinnati, reported at the meeting last year a case of a child with a closed safety pin in the stomach. He had asked the advice of the men present, and they had advised watchful waiting. He had followed that procedure, and in the course of a few weeks the safety pin was passed in the natural way.

Dr. Robert C. Lynch, New Orleans, in closing the discussion, said that he personally would never attempt fluoroscopic bronchoscopy or the use of the fluoroscope without the radiologist being present and without his direction and advice, and he had found it helpful to use the wide open screen instead of the usual method of radiologists of narrowing the diaphragm down to the little circle. He had never exposed the patient to the rays for more than a few seconds, and had kept the total time of the exposure of the patient to the x ray to avoid the burn. He used a Coolidge tube of low penetration, and therefore there had been no trouble from burns. Somebody had spoken of that in the discussion. He could not be satisfied to remove a foregn body from the upper end of the esophagus without the aid of a tube. He much preferred to see than to go in with the forceps blindly. In the bronchus cases it was extremely comforting to watch the angle forceps in their relation to the point of the forceps to the abscess cavity; in other words, it could be determined accurately that the point of the forceps was not beyond the limits of the cavity. These abscesses were all thick walled and stood out fairly prominently with the x ray so that one could be sure that they were searching the wall of the cavity and were not beyond the wall of the cavity. Especially with the angular forceps, those that Dr. Jackson had presented, where one worked at the top of the cavity which was the location of the most of the foreign bodies in these old, long retained cases, it was considerable comfort to feel that the forceps were in the cavity and not beyond its limits. In the case in which a baby six weeks old had a safety pin in its stomach, the pin was an inch and a quarter long, with the point open, and it was plain to see that the clasp end of the pin was engaging in the pyloric orifice and the point end was outside of the pylorus, and it was going through that in this direction so that there would be as much force in the propulson through the pylorus. It could not have done anything else than to stick through the stomach at that point, and it was then decided that he should work for seven minutes exactly in an attempt to locate the pin in the folds of the stomach and that the ballooning of the stomach would not be advisable under these circumstances. At the end of the seven minutes, regardless of success or failure, the case was immediately turned over to the surgeon who was in readiness to do the gastrostomy, and in fifteen minutes the baby was closed up and back in the room, and the opening in the stomach was not more than a quarter of an inch long. For those who are not likely to have this experience and for the surgeon who might not know the technic, Dr. Lynch believed that the best technic for the general surgeon was to grasp the pin on the outside of the stomach; if he opened the stomach and searched around with his fingers inside of the stomach he would never find the pin; he should grasp the pin on the outside and not let go until he made the incision and grasped it with his forceps. If he did it in that way he could then make a little cut and slip the pin out with the least amount of traumatism and in the shortest time. Some of the surgeons did not seem to know that little point.

Dr. Lynch said that it seemed to him that fluoroscopic bronchoscopy was one of those things that was to be used only in selected cases. It was not right to subject the patient to fluoroscopy in every case, but in the deeper cases and in those of long retained foreign bodies where abscess cavities had developed, or in cases, for instance, of the quarter in the stomach which had stayed in one place for two weeks, fluoroscopy was extremely important. Of course, it was right to watch these cases for a long period of time, but where a foreign body remained in the stomach for at least two weeks it was certain that there was ulceration in that location and that there would be ulceration through the stomach, that foreign body ought to be removed in some way or other, either through an incision through the stomach or by the gastroscope. He had found that it was rather hard to search the area of the stomach by means of the gastroscope alone and that the combination of the gastroscope and the fluoroscope permitted of the proper searching of the stomach in a much more comfortable way to the operator.

Radium in Esophageal Malignancy.—Dr. H. H. FORBES, of New York, read a paper on this subject which was published in the NEW YORK MEDICAL JOURNAL, October 16, 1920.

Difficulties Encountered in Direct Laryngoscopy.—Dr. ROBERT F. RIDPATH, of Philadelphia, read a paper on this subject which appears on page 484.

Dr. SIDNEY YANKHAUER, of New York, in discussing the subject, said that the title of the paper referred to the difficulties encountered in laryngoscopy, but he had told them of the difficulties encountered in bronchoscopy. Thinking over the difficulties he had had, he recalled two cases in which he had a most peculiar experience, and related them particularly for the purpose of asking whether anyone else had had such an experience. These cases were socalled edematous fibroma of the larynx, tumor of the vocal cords, consisting of a small sessile mass of mucous membrane. In both of these cases he had suspended the patient and got an excellent view of the vocal cords from the anterior commissure back, and the tumor had disappeared under suspension. He looked all over the surface but was unable to find the tumor in the suspension laryngoscope. Subsequently he removed the tumors, and the diagnosis was edematous polyp.

Tumor of the Hypopharynx in an Infant Eleven Weeks Old.—Dr. D. J. GIBB WISHART, of Toronto, read a paper on this subject which appears on page 458.

Dr. WILLIAM B. CHAMBERLIN, of Cleveland, said that some years ago he was called in consultation to see a baby who had just been delivered, who was said to have some growth in the mouth. The attending physician had placed a hemostat on the growth and was afraid he might lose it. On examination Dr. Chamberlin found the tumor was about the size of the distal phalanx of one's thumb and attached by a long and slender pedicle. The pedicle apparently was located at the lower pole of the tonsil on the left side. He was somewhat solicitous on account of not knowing how much of a blood supply it had, and as he had taken along an ordinary nasal snare he slipped the snare loop over the tumor and pedicle down as close to the attachment as possible and removed the growth. It proved to be a teratoma. It might be similar to the growth that Dr. Wishart described.

Bronchoscopic Diagnosis of Interpulmonary Disease.—Dr. Sidney Yankauer, of New York, read a paper on this subject.

Dr. Chevalier Jackson, of Philadelphia, said he thought Dr. Yankauer deserved a great deal of credit for having worked so energetically and so enthusiastically on research in bronchial disease. He thought foreign body work had dwarfed the work in diseases of the bronchi, and probably in twenty years from now, if such men as Dr. Yankauer continued to work on it, the shoe would be on the other foot. The most essential thing, it seemed to him, in placing bronchoscopy on a sure footing with the surgeon and the internist was to develop the technic to the point where the tube could be slipped in readily without general anesthesia and the ordeal would not be such a formidable one that the patient and internist and surgeon would dread it.

In regard to tuberculosis, it was such a protean disease that it was probable that there would be many different endoscopic pictures seen. He mentioned only two. In one, in a child one year old, supposed by the father, a physician, never to have had temperature elevation, a large thymus showed in the ray. Bronchoscopy showed compression stenosis of the trachea, but on going down the left bronchus, the child became black in the face, and he withdrew and went down the right bronchus, and the child ceased respiration. Both bronchi were corked with cheesy material occluding the lung tissue from aeration. He withdrew and the breathing became quite good again, but later the child died. A postmortem was done and there was found an enormous thymus gland extending over much of the anterior surface of the lungs. Both lungs were tuberculous. The occluding material, which had caused the dyspnea and which he had not had time to identify, was found to be cheesy glands that had broken down. He had a vivid mental picture of the endoscopic appearance and had made a drawing of them. In the other case all he could see was pus and blood coming out of the upper lobe bronchus, the orifice of which was in a state of chronic inflammation. The stem bronchus was also in a state of chronic bronchitis, differing somewhat from that seen in nontuberculous bronchitis. From seeing tuberculosis in other mucosæ, he assumed that those bronchi were not involved in the local bronchitis, but that it was a chronic bronchitis. What the lesion was in the upper lobe he could not tell, but the sputum was laden with bacilli. The work was only in its infancy, and he thought it behooved all to explore every case in which bronchoscopy was justifiable, and especially to develop the technic so as to increase opportunities for study.

Foreign Bodies in the Esophagus and Bronchi. Dr. C. J. Imperatori, of New York, presented a report of six cases of foreign bodies in the esophagus and bronchi, which appears on page 438.

Dr. Chevalier Jackson, of Philadelphia, said he thought that Dr. Imperatori was to be congratulated on the case with the razor blade, which seemed to him to be a formidable object to remove. He thought that in protecting the tissues with the lip of the tube he had exercised great skill. With a foreign body of that kind, it seemed to him it would have been easy to have laceration of the tissue which would extend down into the mediastinum. Subglottic edema being present before bronchoscopy was a fact that was frequently overlooked. All ought to note whether it was present or not before the bronchoscope was introduced. If present beforehand in a very young child, especially if the bronchoscope was in for a long time, tracheotomy was probable. On the other hand, if there was no subglottic edema, a tracheotomy was not likely to be necessary, unless the bronchoscopy lasted longer than it should. The prolonged contact of the tube in a child less than two years of age should be avoided. When the time limit was reached the bronchoscope should be withdrawn and not reinserted for a week unless for urgent reasons. Dr. Imperatori was to be congratulated on the case in which he had coaxed the foreign body up—the case of the ball bearing. It should be our effort to coax the foreign body up and not to pursue it downward. Dr. Jackson said he had added that to the postulates he had formulated years ago. The deeper a foreign body was driven the more difficult it was to remove. He was glad to note that Dr. Imperatori had had an after x ray taken. For many years a röntgenogram had always been taken after the removal of the foreign body. Some important data had been accumulated, a part of which had already been published, by taking an x ray after bronchoscopy, whether the foreign body showed beforehand or not.

In many of his cases Dr. Jackson said that Dr. Manges and Dr. Spencer had brought out the diagnostic value of the point that in certain foreign bodies, especially peanut kernels, there was an increased density on the uninvaded side. He understood that in Dr. Imperatori's case the diaphragm was flattened and the mediastinum and heart were displaced over toward the uninvaded side; also that there was an emphysema due to the valvelike action of the foreign body, a phenomenon that was first brought to my attention by Dr. Iglauer. In cases of nonopaque foreign bodies like peanut kernels, Dr. Manges had come to recognize the nonopaque side as the invaded side, and quite a large series of cases had been reported demonstrating the fact.

Dr. Jackson said that the grape stem case brought to his mind an experience he had had with Dr. John Rodman, who had invited him to do a gastroscopy on a patient on whom he had done an abdominal operation with resection for malignancy. He had passed the gastroscope and had seen an object much like that specimen that was being exhibited. He asked the intern if the man had had anything to eat, and he replied that he had had grapes that morning. Dr. Jackson, said that he saw a grapestem and would remove it. Before doing so he asked Dr. Rodman to look in, who announced to the students and members of the faculty of the Medico-Chirurgical College present that the grape stem was his Pagenstecher sutures.

Dr. Henry H. Forbes, of New York, suggested that in small children the anterior commissure should be used rather than Dr. Jackson's instrument. He had given up using the small Jackson instrument because he had had two cases of foreign bodies in which the edema was so marked that it filled up the lumen of the tube.

Dr. THOMAS E. CARMODY, of Denver, said that several years ago he had had a case of subglottic edema in a boy between four and five years. He believed, however, that part of the trouble was due to too prolonged instrumentation. He had to do a tracheotomy but in spite of the tracheotomy a tracheal edema developed and death followed. He said he had noticed the point brought out by Dr. Jackson concerning the side on which the foreign body was not showing in the skiagraph. In fact in one of the first cases he had had it was shown that that bronchus was plugged and the air absorbed.

Dr. RICHMOND MCKINNEY, of Memphis, Tenn., said that the point about subglottic edema in young children was very important. He had lost a patient several years ago in whom he had done an esophagostomy for an overall button. The child had been allowed to choke to death without Dr. McKinney being notified. He said he watched these cases closely, and if an edema developed he performed a tracheotomy which did not add to the danger. One felt safer with the trachea open, realizing that the child was getting plenty of air.

Dr. SAMUEL IGLAUER, of Cincinnati, referred to the phenomenon that Dr. Jackson had spoken of, that is, a clear lung on the side on which the foreign body was located was not due to absorption of the air but to trapping of the air. There was a tendency to close out the air during expiration and that led to ballooning out of the lung on the affected side. That, of course, only meant in the early stages of the condition because if the foreign body was there long enough, one would eventually get a foreign body with consolidation.

Dr. WILLIAM B. CHAMBERLIN, of Cleveland, said that he had had recently two cases of foreign bodies in the left bronchus; one was a peanut completely plugging the bronchus. Shortly afterward he saw a child two years old with a kernel of corn in the same position—in the left bronchus. He was yet unable to explain how he lost that case. He located the foreign body easily, but as the child became cyanotic, he desisted from any attempt to remove it. Twenty-four hours later he made another attempt and removed the foreign body in five minutes; using the angular forceps of Jackson. He could feel the tug of the lung as he pulled it out. There was absolutely no bleeding. The child left the table apparently in good condition at two oclock in the afternoon and went through the night in good condition. The next morning Dr. Chamberlin was informed that the child had died suddenly. Dr. Chamberlin had reported this case because he was anxious to know whether other men had had similar experiences. He was at a loss to account for such a sudden death eighteen hours after the operation. The foreign body was a kernel of field corn and was removed intact.

Dr. HENRY L. LYNAH, of New York, said he thought Dr. Imperatori was to be congratulated on his series. Every once in a while a patient would attempt suicide by a foreign body. Dr. Jackson had kept a lady alive who had swallowed tacks, and now Dr. Imperatori had come along and removed a razor blade. While down south Dr. Lynah said he had met a woman who was in the habit of swallowing safety pins, and he had removed three safety pins on six successive days. Then she swallowed a third one that passed; and then she took the fourth pin and put it in her throat. Her husband had had her x rayed, and an enormous safety pin had been located. In trying to close on the pin it was forced down into the stomach. The pin remained there and it finally perforated and she succumbed.

Ballooning of the lung occurred in cases of foreign body and influenza and diphtheria. The patients were ballooned on both sides and had asthmatic attacks with dyspnea. These cases were due to an enormous amount of pulmonary engorgement plus ballooning of the lung, and the patients wheezed and died of exhaustion. In those cases the patients always suffered from a marked amount of cyanosis, and the cyanosis had been proved on dogs to be due to emphysema on one side as Dr. Iglauer had explained. In the case of the ball bearing in the lung, that lung was completely cut off and that object lodged in the right bronchus and succeeded in plugging it so well that there was no air going into the lung.

An Aid to Diagnosis of Suspected Foreign Body in the Esophagus.—Dr. ELLEN J. PATTERSON, of Pittsburgh, read a paper on this subject which appears on page 447.

Dr. CHEVALIER JACKSON, of Philadelphia, said that Dr. Patterson's crisp, terse paper called to mind many ordeals that he had had. He thought one of the greatest trials of his life had been the hysterical patient or the patient he supposed was hysterical but was not. The hysterical ones were not always women; he had seen hysterical men. The question to decide was whether or not to do an esophagoscopy. Of all the difficult decisions for him the most difficult one was whether or not to put down an esophagoscope in certain cases. He did not want to put down an esophagoscope in every patient who thought he had a foreign body, and he believed Dr. Patterson had given them a working plan. Fluoroscopy required one experienced in esophageal work. In the average patient, in swallowing, the capsule or any other visible object swallowed did not go straight down with even, steady motion but there were hesitations, more marked in some people than in others, and it required a nicety of decision to say whether an opaque capsule had touched the foreign body, hesitated a moment and gone on. He was astonished at the number of radiographers who did not know about that opaque capsule. Of those who did know, some were unaware of the error to which they are liable from lack of previous fluoroscopic study of the esophagus. The question to decide was one of four things when a patient came in and thought there was something sticking in his "throat." First, was it pure imagination in a neurotic case; second, was there a foreign body present; third, were the patient's sensations truly described and due to the foreign body; or, fourth, were they due to abrasion by the foreign body or by digging with the fingers. Dr. Jackson said he had about come to the conclusion in those cases where there was still a doubt, especially when fluoroscopy was negative, that instead of putting down an esophagoscope it was wise to give the

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, MARCH 16, 1921.

patient bismuth with calomel and wait and see whether the sensations did not subside completely. The opaque capsule, if filled with bismuth, had a local beneficial effect when it dissolved at the site of a foreign body.

Dr. THOMAS HUBBARD, of Toledo, said that Dr. Patterson's paper had opened the question of differential diagnosis—foreign body or nerves. That ingenious method would be applicable to certain cases. The two plane method, examination through the fluoroscope anterioposteriorly and laterally, gave useful information. If, for instance, there was a flat foreign body which was not opaque to the ray, by the lateral method the thinning out could be detected, a ribbon shadow of barium deflected forward or backward, or both. Anterioposteriorly simply the site of obstruction could be located.

One should not indiscriminately label these patients hysterical. He called attention to the fact that anyone would become excited and even hysterical when he realized that there was an obstruction to the *prima via.* That brought on symptoms which were like hysteria. In the true hysterical case, the groups of nerves and muscles which performed a certain function were involved. In organic nerve disease only a definite nerve tract was affected; in the hysterical the whole function of deglutition might be involved, many nerves, including even the sympathetic system, were in confusion. These patients should not be labelled hysterical simply because they became hysterical on being choked. Any one would do that. In the true organic type, such as general paresis, there was a definite paresis or an anesthesia that simulated foreign body obstruction or spasm or anything else. In the hysterical an area of anesthesia might become hyperesthetic under the influence of psychic fixation, and that produced the tonic spasms, such as esophagismus. The laryngologist saw many phases of incidental hysteria, but not all nervous throats were hysterical.

Another point that Dr. Hubbard brought out was the existence of cases of esophageal myositis of the rheumatic type, which might be of sudden onset like muscular rheumatic pains anywhere. Dysphagia might result of such severity as to suggest foreign body. It was easy for any patient to get that suggestion and then insist that there was a foreign body in the gullet. Examination showed an edematous mucosa, and the symptoms were characteristic of rheumatism. Dr. Hubbard said that his patients had improved promptly under large doses of salicylate of sodium by rectum. He had not been able to find much in the literature about that type of myositis of the esophagus, but he believed that it was a clinical entity and some of these obscure cases labeled foreign body would come under that classification. The differential diagnosis of esophageal disorders was much complicated by the fact that the pharyngeal plexus was very susceptible to psychic interference. The method described by Dr. Patterson would aid in clearing the diagnosis in obscure cases.

Dr. JOHN W. MURPHY, of Cincinnati, said he thought great care should be exercised in deciding whether these cases were of a hysterical or neurotic type. He recalled two cases that he had treated, one a young woman brought by a doctor who said that she was hysterical and thought she had a bone in her esophagus; he had examined her and could find none, but she would not be satisfied until Dr. Murphy had examined her. After he had got the patient's history and her symptoms he felt justified in putting down the esophagoscope and removed a meat bone an inch long. So that the woman was being accused of hysteria when there really was a foreign body. Dr. Murphy told of another woman who for seven weeks had been complaining of a foreign body in her esophagus. Finally she came to his office and she said she was sure she had a foreign body there. She had had an x ray taken, and everything was negative, and they assured her it was a hysterical condition. However, she described her symptoms and she said she had reached the point where she could hardly swallow any more. He put down the esophagoscope and at the cardia there was a beef bone as large as the first phalanx, a very hard, sharp bone which had been in that situation for seven weeks, and it was removed without difficulty. Now she had been accused of hysteria. The x ray man had made the mistake of not x raying low enough. They usually considered that the foreign body must be high up; and he failed to get low enough to catch that bone which could have shown easily.

Dr. Ellen J. Patterson said she was glad to hear the discussion. There were people who could not swallow a capsule. Dr. Grier gave these patients a capsule, and then if it did not go down, he gave a glass of water, and if the capsule still remained he made a plate. Where there was a foreign body in the esophagus, the capsule would usually lodge above the obstruction or stricture.

Report of a Case of Tracheoaerocele.—Dr. SAMUEL IGLAUER, of Cincinnati, reported this case. His report appears in full on page 464.

New York Medical Journal
INCORPORATING THE
Philadelphia Medical Journal and the Medical News
A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 11. NEW YORK, WEDNESDAY, APRIL 6, 1921. WHOLE No. 2206.

Phases of Visceral Displacements in General Practice*

By CHARLES A. L. REED, M. D.,
Cincinnati, Ohio,

Displacements of the abdominal organs, first described and designated as splanchnoptosis by Glenard (1), and again brought to the attention of the profession by the courageous initiative of Sir Arbuthnot Lane, are of frequent occurrence and of vast importance. This fact is being confirmed by the daily experience of general practitioners, by the revelations of röntgenological examinations, and by the frequent and more intelligent surgical exploration of the abdominal cavity.

RESPONSIBILITY OF SURGEONS.

I say the more intelligent surgical exploration of the abdominal cavity, because, since the days of McDowell, surgeons have been invading that holy of holies of the human anatomy to take out ovarian tumors, fibroid tumors, diseased uterine adnexa, to drain and cut out gallbladders, relieve strangulations, splice and short circuit intestines, and for divers and sundry other laudable but equally specific purposes, without giving due attention to anything but the special object of their quest. They, or at least many of them, have at the same time found and are yet finding the pylorus in the pelvis, the cecum below Poupart's ligament, the transverse colon in the cul de sac of Douglas, the small intestines piled up on the pelvic floor or protruding into hernial sacs, the retroperitoneal lymphatics enormously enlarged, the mesenteric and mesocolic veins distended sometimes as large as black lead pencils—I say they find these with divers and sundry conditions other than the particular thing for which they are looking, and have attached no clinical or pathological importance whatever to any of them. Sir Spencer Wells, during thirty years, operated in something like two thousand cases of ovarian tumor, for which he was looking, without ever having seen an example of pus tubes, for which he was not looking. He even denied the existence of the latter condition after Lawson Tait had demonstrated the lesion to the satisfaction of all surgeons who had not already and quite inadvertently committed themselves to the other side of the question. This is not intelligent practice—not intelligent exploration of the abdomen. There is today no surgeon in the world who does not know that it is impossible to open two thousand consecutive cases of ovarian tumor, taken as they come, as they were taken at the Samaritan Free Hospital in those days, without encountering many, I may almost say hundreds, of pus tubes. The same was and is yet unhappily true with respect to kidney conditions, gallbladder disease, the many pathological states in the upper zone of the abdomen, all of which were being overlooked just as too many surgeons are yet overlooking the displacements described so many years ago by Glenard, emphasized by Lane, and confirmed by what I may call ample experience at my own hands.

RESPONSIBILITY OF PHYSICIANS.

But this responsibility does not rest exclusively or even primarily with the surgeons. These cases come at first hand under the care of the general practitioner, who, like the surgeon, if I may take as criteria the stories told me by literally hundreds of these sufferers, too generally make no attempt even to examine the abdomen. These patients, with practical unanimity, state that they have never been stripped; that no inspection has been made of their posture when standing; that no attention has been given to the tone and contour of the belly either standing or lying; that the abdomen has never been either palpated or percussed; that no x ray examination has ever been made to determine either stomach clearance, intestinal transit, or visceral positions—in short, that no examination has ever been made of the abdomen. It is only latterly that I have begun to have some exceptions to this rule. Occasionally, but only occasionally, patients now come in with a well established diagnosis of splanchnoptosis, confirmed by x ray plates which they bring along with them. Often, however, the pictures have been taken at times and in positions calculated to conceal rather than reveal the true pathological state; while in other instances perfectly plain and conclusive plates have been egregiously misinterpreted by the mere technicians who have taken them. And right here I must digress long enough to state that I today know of nothing more presumptuous than the attempts to interpret x ray plates by socalled röntgenologists who know little

---

*Read by title, *Phases of Splanchnoptosis*, before the Southern Surgical Association, Hot Springs, Va., December 16, 1920.

Copyright, 1921, by A. R. Elliott Publishing Company.

or nothing of anatomy, who are not familiar with pathology, who are strangers to autopsies, who never frequent operating rooms, and who, in too many instances, are without any fundamental medical knowledge whatever. A true röntgenologist, properly to interpret his findings, must be, as now and then an announced röntgenologist is, an educated physician in the broadest sense of the word—and something more.

PHASES OF SPLANCHNOPTOSIS.

With these ptotic cases properly examined it will be found, first, that any or all of the abdominal and pelvic organs may be involved; second, that the clinical manifestations vary with the organs chiefly involved and with the associated causes of disease; and, third, that the condition of the viscera may exist as either a primarily causative or secondarily modifying factor of various specifically caused and definite clinical states. Thus we know that any condition which lowers the general resistance of the body likewise favors the activity of any specific infection, such as that of tuberculosis, or of the various streptococci, or of the various mixed infections, or of the toxemias consequent upon the now recognized numerous focal infections, including those from the gastrointestinal tract. It was this fact underlying the work of Lane that prompted and justified him in enumerating numerous conditions, or socalled diseases—some eighteen, at last count, I believe—in which cure had followed operation for the splanchnoptosis. The statement was erroneously construed as a declaration that the visceral displacements with their associated pathology were the initial or even specific cause of the conditions mentioned. They may, indeed, have been the initial links in certain of the pathological chains, but more frequently they were probably ancillary factors that lowered resistance and thus made the more specific cause effective. In either event, recovery would logically not have been practicable without the elimination of their influence. It will thus be seen that in spite of abuse, satire, or even the merriment of his would be critics, the catalogue of Lane might well have been and may yet be extended to embrace any or all diseases the natural history of which is influenced for the worse by the lowered resistance of the body. It is thus that splanchnoptosis assumes numerous clinical phases. These phases vary from, first, mere functional disturbances of the gastrointestinal tract—always constipation, generally upset digestion or other worse conditions, including ulcer of the stomach, to, second, systemic conditions embracing the arthritides, the neuroses, the psychoses, and the convulsive phenomena commonly called epilepsy. Everybody who has looked into the question today recognizes that between the initial condition within the abdomen and the systemic manifestation there is an intermediate toxemia—the word toxin being here used in its broader and more generic sense, and not exclusively to imply a poison of bacterial origin. It is my purpose today to speak chiefly of the psychotic and convulsive phases of splanchnoptosis.

THE PSYCHOTIC PHASE.

One important phase of splanchnoptosis is the relationship of the visceral displacements to the various psychoses. That this relationship exists in many cases is now amply confirmed by abundant experience of numerous observers. Some twelve years ago, Dr. F. W. Langdon, of Cincinnati, referred to me a splanchnoptotic case in which a long continued, profound but simple, melancholia was associated with visceral displacements—more particularly pronounced in the kidneys. Operative restoration of the displacement resulted in the disappearance of the melancholia and the restoration of the patient (a woman about fifty) to her family and to her social life. Somewhat later, Dr. Herman H. Hoppe, of Cincinnati, referred to me the case of a man about forty-five, a lawyer, who was the victim of melancholia for which he had been in an institution for a period of something like three years. In this case, I found the man's stomach and colon in his pelvis. After a restoration of these organs by parietal implantation, he returned to his office in six weeks and has since followed his professional occupation without interruption. I have had occasion to examine a number of mental cases, some of which had been in institutions varying from five to twelve years, and in all of which I found a more or less general splanchnoptosis. I did not operate in these particular cases because of lack of institutional facilities for their care. Although the indications for correction of these conditions were positive, I am not aware that any treatment, medical, hygienic or surgical, has been attempted, or that there has been any modification in their occupational employment in the institutions in which they yet remain incarcerated. This phase of splanchnoptosis has simply been brought to my attention sufficiently to prepare me to receive appreciatively the excellent progressive work done by Dr. Henry A. Cotton, of the New Jersey State Hospital. It is with special gratification that the actual situation in this particular is frankly revealed by Dr. Cotton, who, speaking for institutional psychiatrists in general, says: "We who have been dealing with the insane, or, as we prefer to say, those suffering from mental diseases, have for years isolated ourselves from general medicine and have considered the patient wholly from the viewpoint of the mental picture. And while we have made advances in the care of these patients, our recovery rate has not changed, except for the worse, in the last fifty years. In spite of the fact that many patients showed evidence of profound physical disturbances on admission to the hospital, this fact was ignored and we neglected even to ascertain what physical condition the patient was suffering from." (2.)

In this institution, under Doctor Cotton's direction, a careful study is made of the visceral conditions in all patients, and, in all instances in which it is practicable, these conditions, I believe, are corrected with most satisfactory results as to both the physical state and mental conditions of the patient—assuming that there is any difference between mental and physical states, that is, in the sense that they are always necessarily interrelated.

THE CONVULSIVE PHASE.

The fact that chronic convulsive toxemia, usually called epilepsy, is constantly associated with displacements of the abdominal organs, has now been demonstrated in 810 consecutive cases in my own hands. This demonstration has consisted of, first, the clinical history; second, the physical examination of the patient; third, the serial x ray study, and, finally, in the vast majority of instances, the surgical exploration of the abdominal cavity. This record, showing the additional and significant fact that the visceral condition is always antecedent to and associated with the convulsive phenomena, as shown by the earlier development of constipation and the absence of both hereditary factors and extraabdominal lesions, forces the conclusion that socalled epilepsy occurs only as a symptom of splanchnoptosis. This conclusion is further confirmed, not only by my own observation but by the daily observation of every general practitioner, to the effect that epilepsy is always associated with constipation; that the epilepsy is worse when the constipation is worse, and that the most effective, ready at hand relief from seizures is offered by laxatives. It was this fact, confirmed by surgical experience, that prompted me to write my first article on the subject under the title of Constipation and Epilepsy (3), and upon which I based my second article on the probable cause and logical treatment of epilepsy (4). My later experience, recorded in subsequent reports (5), has shown that constipation, while antecedent to and associated with the seizures in these cases, is, like the seizures themselves, a symptom of splanchnoptosis. The mere fact that many people who have splanchnoptosis do not have socalled epilepsy does not and cannot in the least invalidate the observed and here recorded fact that eight hundred and ten people who did have epilepsy likewise had splanchnoptosis, and that the development of the splanchnoptosis was antecedent to the epilepsy. The explanation of this difference, which will doubtless sometime be furnished through biochemical research, if it is not already at hand in the basic work of Novy and De Kreieif is something with which I have no concern in this connection. I am simply interested at this time in the fundamental fact, namely, that epilepsy is always associated with and is therefore a symptom of antecedent splanchnoptosis.

EXAMINATION OF THE SPLANCHNOPTOTIC CASE.

Every case of chronic constipation, every case of chronic headaches, every case of psychosis, every case of chronic toxemia, whether convulsive or nonconvulsive, should be examined with reference to the presence or absence of splanchnoptosis. The usual comprehensive clinical history should be taken. Then let the patient be stripped and a physical inventory carefully made, front and back, from head to foot, standing and lying. Special search should be made for possible foci of infection, not only as primarly but as ancillary factors in the case. The abdomen should be gone over, first, with the patient on his back; next, with him erect. A very little practise with abdominal percussion will enable the physician to detect the gastric note, the cecal note, the transverse colonic note, sometimes the sigmoidal note. With the patient on his back, these notes will generally be found approximately in their normal positions, with the possible exception of the cecal note, which in these cases will always be found low in the right lower quadrant, sometimes as low as Poupart's ligament. Now stand the patients up and it will be found that all of these notes, these separate areas of resonance, will have become obscured, more or less blended, and, by gravitation, will have descended into the lower zone of the abdomen. The only note that does not thus migrate downward is that of the cardia, which, however, is generally farther around to the left and toward the back. In other words, the viscera will have dropped. This examination is all very easy—and very important.

Then all cases, especially in the present status of the whole question, should be given an x ray study. When this study is done right it is very clarifying; when done wrong it is very misleading. It is done approximately right when the following rules are observed: 1, the patient should be free from all laxatives or enemas for at least twenty-four hours before taking the barium meal; 2, the barium meal should be taken at nine o'clock in the morning; 3, the first picture, to show the stomach and beginning duodenal transit, should be taken ten minutes later—*with the patient upright;* 4, the second picture, to show conditions at the ileocecal juncture, should be taken at three o'clock in the afternoon—*with the patient prone;* 5, the third picture, to show the condition and position of the colon, should be taken at nine o'clock the next morning—*with the patient upright.* These pictures are essential; others (after ingestion) to show, a, completed transit, or, b, relative positions of colon prone and standing; or (after enema) to show, c, redundancy or not of the sigmoid; d, ileocecal competency or not, or, e, other conditions, may be taken or not according to the indications of the individual case. Of course decensus of the liver and kidneys is not shown by the x ray, but may be detected by careful palpation in different positions.

The ease with which all of this can be done, and the importance of the facts thus elicited, make such examination of these cases an imperative duty not only for individual practitioners but for institutions. I cannot resist this opportunity to insist more especially upon the duties of institutions—those for neurotics, psychotics and socalled epileptics alike—in the premises:

1. All institutions for both insane and epileptics should be provided with a well equipped, competent and liberally supported röntgenological service.

2. There should be a röntgenological survey of the entire insane and epileptic population of all public institutions, for the purpose of determining the condition of the abdominal viscera.

3. The diagnosis should be individualized in each case with reference, first, to visceral causative factors; and, second, to available treatment with the object and understanding that the treatment in all cases should be directed to overcoming such visceral conditions, either by medical and hygienic treatment or, when necessary, by surgical restitution of the parts.

HYGIENIC AND MEDICAL MEASURES.

In my paper before the American Medical Association in 1916 I emphasized not only the practicability but the importance of conservative hygienic and medical treatment in ptotic states of the abdominal viscera and their sequelæ. The practical application of this principle has since grown in my hands as essential for both, a, the proper preparation of patients for operation, and, b, the proper care of patients for some time after operation. My procedure was at first based upon the conception that the chief objective was mechanically to secure at least the approximate replacement of the ptotic colon, stomach and other organs, for at least brief periods, frequently repeated, thus to give them at least brief opportunities to resume functionation under approximately normal conditions. It was then thought that the intraintestinal changes were the essential instead of the ancillary factors. Now, however, that the intravenous changes have come to be recognized, not merely as incidental, but the essential and determining factors, in convulsive cases, the application of this same principle has a new and confirmatory significance.

The fact that the ptotic condition was obviously caused and is being maintained by the direct action of the force of gravitation, it follows that the corrective measure must involve a reverse application of the same force. This, a, detoxication of the large bowel, b, incidental alkalinization of the general system, and, c, restoration of the visceral circulation, are attempted by measures as follows:

First: a. The patient is to go to bed for a week. b. The foot of the bed is to be elevated from six to twelve inches, according to comfort. c. Twice a day, for half an hour at a time, she is to lie on her back on a board—the ironing board conveniently to be found in all houses—one end of which is to be placed on the footboard and the other at the base of the patient's neck, so that the body will be placed at approximately forty-five degrees. d. While in this position the patient is to massage the abdomen by deep, firm but gentle pressure, from the pubes to the waistline.

Second: a. During this in-bed week, the patient, before taking the "ironing board" in the evening, is to have an enema (bicarbonate of soda, half ounce; water, half gallon), given in the knee-chest position, the enema to be given with a small nozzle and with the reservoir about six feet high. (Note—The knee-chest position is an important part of the postural treatment, the enema being given not so much for washing out the colon as for its replacement effect upon the colon, and may therefore be given preferably after a normal evacuation.) b. Bicarbonate of soda in fifteen to sixty grain doses is to be given in water within an hour after each meal. c. A dose of calomel may be given once a week with advantage if indicated. d. Magnesium sulphate in dram doses should be given with meals. .e. Ordinary diet. f. Mineral oil may be given.

Third: a. The next week the patient may be up and around. b. During this week, while out of bed, he or she is to wear a supporter (I use a Camp belt for convenience), to be placed while lying down. c. All other treatment (i. e., enemas and alkalies and "ironing board") to be continued the same as during the in-bed week. The patient during this out-of-bed week should acquire the habit of lying rather than sitting when resting.

Fourth: a. The third week will be a repetition of the first, and the fourth a repetition of the second, and so on, during the continuance of the treatment. During the whole course of the treatment, care should be taken to avoid all occupational or other exercise, the tendency of which is to increase the downward displacement of the viscera.

Fifth: The almost essential condition of success is that, for the first month at least, it shall be carried out under strict hospital discipline. This may be called the period of adjustment, during which, following a careful diagnosis, the adaptability of particular measures to the particular case can be determined by close professional attention, including the application of laboratory methods. During this period the patient will have become so disciplined and trained in the application of the treatment that, in most cases, it can be continued at home.

In certain of these cases there is a distinct narrowing of the lower thorax, thus diminishing the capacity of the upper zone of the abdomen. In such instances, in addition to the preceding practice, I have adopted measures to expand the flaring portion of the chest by overhead exercises with the arms, thus utilizing the pectoral muscles to draw out the ribs. The idea was first presented to me by Dr. William Strietman, of Oakland, California, who has achieved much good by its adoption. Dr. Joel Goldthwaite, of Boston, has long since been managing certain of his splanchnoptotic cases along the same orthopedic lines.

The treatment outlined above is applicable in all cases, and is generally followed by improvement, certainly so long as it is continued. In certain instances in which I have prescribed it as a preparatory course for operation, the improvement has been so marked that I have indefinitely deferred operation. This justifies hope that, in such instances, it may result in permanent cure; it has also caused me to wonder whether or not the simple element of prolonged rest in bed is not the real explanation of the not only temporary improvements but incidental recoveries from socalled epilepsy, reported as having occasionally occurred, following the surgical operations undertaken for other purposes, and for conditions in no wise related to the now known visceral pathology of socalled epilepsy. The same results have occasionally been observed following long illnesses, such as typhoid, malarial and other fevers. In any event this line of treatment, as a curative measure, must be recognized as having distinct limitations. One may no more expect permanently to cure extreme displacement of the stomach and colon by such measures than to reduce a dislocated elbow with a tissue paper bandage.

SURGICAL TREATMENT.

As the pathological conditions are now understood, surgical treatment is indicated permanently, a, to correct the visceral displacements and distortions; b, to overcome retardative conditions—e. g., angulations, distortions, malformations and adhesions—within or about the stomach and intestines; but, above all, c, to restore the gastromesenteric circulation to its normal standard. For these purposes there can be no one surgical expedient. Every resource of the experienced abdominal surgeon is called into requisition in these cases, every one of which is a problem within itself. Some of these procedures, such as intestinal resection, intestinal anastomosis, colonectomy, parietal implantation of the colon, hepatopexy, and nephropexy, are so well understood that a description of their various steps is not called for.

EXAMPLES OF RECOVERIES FROM NONCONVULSIVE PHASES OF SPLANCHNOPTOSIS.

In the earlier cases of this sort the patients who came to me as long as twelve years ago applied for relief from constipation generally associated with headaches, neuralgias or arthritides. Many of them gave a history of one or more presumed attacks of appendicitis, and some of them had had appendectomies. They belonged to that class of cases, of which I had had my own share, in which an appendectomy had been done chiefly for pain, but in which, following recovery, the patients continued to have appendicitis with no appendix with which to have it. This experience came to an end just as soon as I began to correct the displacement of the colon and the stomach and other organs—conditions which I had previously disregarded as many others are still disregarding them. In the great majority of cases the constipation was cured, while improvement in this as well as other particulars was realized in the others. Associated functional disturbances were likewise generally brought to an end, followed by the patient's complete restoration to health.

I recall one case referred to me by Dr. J. E. Greiwe, of Cincinnati, in which there was a marked ptosis of practically all of the abdominal viscera, and in which the patient, bedridden for months, was the victim of a vicious succorhœa gastrica. The operative correction of the conditions resulted in immediate cessation of both the constipation and the stomach trouble, in rapid increase of weight, and in resumption of all her normal activities. There have been many parallel cases. The cases referred to me by Dr. F. W. Langdon and Dr. H. H. Hoppe, both of Cincinnati, to which allusion has been made, were simply typical psychotic cases, each the representative of a larger group, such as are being encountered and relieved, not merely by myself, but by such men as Dr. Cotton and others. I am assured that they are likewise representatives of still larger groups of patients now held in custody by institutions all over the country, but who are not being relieved for want of, first, a careful visceral examination, and, next, such treatment, medical, hygienic, orthopedic or surgical, as may be indicated by such examination.

TYPICAL RECOVERIES IN CONVULSIVE SPLANCHNOPTOSIS.

My larger experience has been with the convulsive type of cases. I have only time in this connection to give a few histories of recoveries, each case being typical of a group of similar cases of equally pronounced recoveries:

Case I.—Male, married, aged thirty-one (Dr. William Lee Milner, Cincinnati), September, 1912; family history negative. Had been constipated from childhood, and often had "bilious attacks" and "stomach trouble." When they came on he had violent nocturnal seizures. Mental depression was so marked that he had abandoned all business; distinct grand mal type. Physical examination: Potbelliedness, with gastrocoloptosis; long standing frontal sinus trouble; greatly reduced flesh in spite of abnormal appetite. Parietal implantation of the colon and pylorus was done according to technic already published (7). Marked venous stasis was noted. Prompt surgical recovery, disappearance of constipation and seizures, improvement in weight, restoration of mentality, and successful resumption of business, summarize his subsequent history. With the exception of some remaining frontal sinus trouble, he is now a well man.

Case II.—Male, aged thirty-one (Dr. John Bruyêre, Trenton, N. J.). Family history and previous histories were negative, except as to long standing constipation, until two years previously when he had his first convulsion. History of major seizures about every two weeks, and minor ones several times each day. Physical and x ray examination showed marked gastrocoloptosis. This was confirmed by operation, which also showed exudates and adhesions, including plication and adhesion of the omentum with lipomatous formation. The omentum was removed; the colon and pylorus fixed by parietal implantation, and an appendicostomy was done. He had several seizures for the first six months, after which they cleared up. A letter from Dr. Bruyêre says: "He is feeling fine, and is very grateful to you for all you have done for him."

Case III.—Male, aged fifty-two. (No physician.) a leading manufacturer of Oklahoma. September, 1914. Family history was negative. Patient was robust until twenty-eight, when he contracted malaria, then lues; at thirty he had a sharp nervous attack, during which he could not speak but was not unconscious; always obstinately constipated. Soon the seizures became typical grand mal in type. Gastrocoloptosis was demonstrated; also ileal and colonic stasis. Operation confirmed these findings, with the addition of chronic appendicitis and extensive exudates and adhesions about the appendix and cecum; extreme venous stasis. There was a band adhesion about the terminal ileum. Appendectomy was done, the adhesions were broken up, after which a parietal implantation was done. The patient made a prompt recovery and has had no seizures since the operation.

Case IV.—Male, aged twenty-eight, unmarried. (Dr. A. E. Woehnert, Buffalo, N. Y.) October, 1916. Constipated from childhood. First seizure (grand mal) ten years ago. Had consulted nerve specialists in various cities of Europe and America. Physical examination showed general splanchnoptosis. This was confirmed by x ray as to stomach and colon. Operation revealed extensive adhesions in the right upper quadrant. Parietal implantation with hepatopexy and cecostomy was done as preliminary to a probably required colonectomy. He improved so much, however, that he came back in ten months to have his cecostomy closed. An x ray examination at that time revealed all viscera in normal position. He has been able to attend to a large business all the time since the operation, and a letter from him states that his last seizure was in the spring of 1917.

CASE V.—Female, aged twenty-two, Crawfordsville, Ia. Reported she had no attending physician and was referred by another patient, September, 1917. Family and personal history were negative except as to chronic constipation of patient. First fainting spell five years ago; had both grand mal and petit mal. Physical and x ray examination showed gastrocoloptosis and marked stasis in the terminal ileum in the thirty hour plate. Operation revealed dilated mobile and flabby cecum; band adhesion with lane kink of the ileum; engorged venous circulation; extensive adhesions in the right upper quadrant and between the stomach and the mesocolon. The adhesions were broken up with recovering of the denuded areas. There was prompt recovery from a few seizures after the patient returned, since when she is reported as entirely well.

CASE VI.—Male, aged nineteen. (Dr. William Gaynor States, New York.) December, 1916. This patient was a brilliant young man, who had been forced to abandon his college career because of seizures. There was marked coloptosis with some redundancy of the transverse colon. There was a temptation to do a resection of the transverse colon in this case, but I finally did a suspension operation as a preliminary to a probable colonectomy. There was prompt enough recovery from the operation, but some tardiness in overcoming the seizures. These, however, finally disappeared, and he has since made his course at a leading university.

CASE VII.—Male, aged twenty-eight. (Dr. William H. McCaw, Winfield, Ia.) October, 1916. Previous history negative except as to constipation from childhood. This became worse three years ago, when the attack began. He had since developed both grand mal and petit mal, until he was entirely incapacitated. Gastrocoloptosis, with fecal stasis at the ileum and colon, were demonstrated by x ray and confirmed by operation. On exploring the right lower quadrant by oblique incision, a Lane's kink was found and released; a flabby and hypermobile cecum was found; the muscularis of the colon was atrophied; the mesenteric veins were big and black; the lymphatics were enlarged, and the appendix was adherent to the cecum. It seemed that nothing less than a colonectomy could meet the indications. As the patient was in no condition to stand so extensive an operation, a cecopexy with appendicostomy was done as a preparatory measure. The patient came back as directed at the end of six months for the secondary operation, but as he had had no more attacks and was in excellent condition, he was advised indefinitely to postpone the colonectomy. Four years have since elapsed without recurrence. Late advices from the patient are to the effect that there has been no recurrence; that he is strong and healthy and doing all sorts of even hazardous farm work. A recent letter from the patient states that he is well, and another from Dr. McCaw confirms this report.

CASE VIII—Male, aged twenty-two. (Dr. C. Klem, Cincinnati). October, 1894. This was a case of suppurative appendicitis with emergency operation. The cecum was found low down, fixed in the pelvis, and, like the appendix, was gangrenous. The open cecum was brought up and fixed in the open wound, thus effecting both a cecopexy and a cecostomy. If the fact that the patient suffered from chronic convulsive toxemia was mentioned at the time, it was neither recorded nor regarded, and was not again brought to my attention until a few years ago, when a relative informed me that before this operation the young man had been looked upon as a hopeless epileptic; that he had never had a seizure after the operation, and that now, twenty-six years later, he was a successful railroad executive. I have taken pains to confirm this after history.

CASE IX.—Male, aged twelve. (Dr. G. C. Skinner, Hamilton, Ohio.) May, 1916. Family history was negative. Patient had suffered from constipation from infancy, with mucous colitis in first and second years. Tonsils were removed six years ago. Patient had always suffered from nocturnal enuresis. At nine he had had seizure with salivation, heavy breathing and twitching of one cheek, but without unconsciousness. These attacks recurred at irregular intervals until April, 1915, when he had his first typical grand mal seizure. These have recurred with increasing frequency ever since, with gastric aura, cecal ptosis and distention demonstrated by both physical and x ray examination. Cecopexy with appendectomy was done. The surgical recovery was prompt. There has not been a seizure since the operation, and the lad is now, nearly five years later, an athletic college student.

CASE X.—Male, aged twenty-three. (Dr. E. A. Baldwin, Riverton, Ia.) December, 1914. Family history was negative. Patient had had pneumonia with empyema at seven, and was kicked in the abdomen by a horse at fourteen. An appendectomy had been performed in 1912, six months after first seizure. Since then he had had fifteen grand mal and countless petit mal seizures. A diagnosis of coloptosis with redundant sigmoid was made. Ileosigmoidostomy with formation of intussusception valve in upper arch of sigmoid was performed, and the surgical convalescence was immediate and uneventful. There were a few convulsions following the operation, but none since February, 1915, and the patient, now married, reports himself a well man, and, as this goes to press, writes: "I am glad to say that I am enjoying the best of health."

CASE XI.—Male, aged nineteen. (Dr. Frank Lee Keith, Flat River, Mo., and Dr. R. E. Cunningham, Perryville, Mo.) August, 1915. Both family and previous history negative; patient always constipated; broke collar bone at thirteen; dizzy spells at two; first grand mal seizure at fourteen; last one two weeks previously; latterly convulsions had occurred about once a month with practically constant petit mal; had grown much worse under bromides; physical and x ray examination showed gastrocoloptosis with redundant sigmoid. Ileosigmoidostomy with terminal ileostomy was done. Surgical recovery prompt and uneventful, and patient entered an architect's office. He had a few nocturnal attacks during the next fifteen months. He came back in June, 1917, when x ray studies showed some gastric retardation with anastaltic loading of the colon. This was controlled by resumption of irrigation through the terminal ileostomy. He has since remained well and is now a successful young architect.

Case XII.—Female, aged twenty-seven, unmarried. (Dr. J. P. Laird, Devon, Pa.) July, 1915. All histories were negative except long standing constipation, until three years previously, when she had her first fainting spell, which speedily merged into grand mal. It recurred at first about every two months. The appendix had been removed by another surgeon, who did something to the intestines. A diagnosis of coloptosis, cecum mobile, and redundant sigmoid, was made. Findings were confirmed by operation, which also showed veins practically varicosed, and general lymphatic enlargement. Ileosigmoidostomy was done in the lower arch of the sigmoid, and an intussusception valve was made in the upper arch of the sigmoid. There was prompt recovery and she had not had a toxemic seizure of any sort since the operation. On my advice and responsibility she married; she now has two fine children, and, in a letter just at hand, says: "I have had no return at all of my old trouble."

Case XIII.—Male, aged seventeen. (Dr. C. R. McConnell, Williamsport, Ohio.) January, 1915. All previous histories were negative, except as to constipation, until the preceding March, when without warning he had three grand mal and four petit mal seizures in a single day. In the eleven months to date he had records of sixty-four major and 1,243 minor attacks, not counting probable nocturnal seizures. There was a slight degree of choking. Physical and x ray examinations established gastroptosis with cecum low down in the pelvis. Redundant colon was demonstrated. These findings were confirmed by surgical exploration when an ileosigmoidostomy with cecopexy was done, but without terminal ileostomy. The patient made a prompt recovery as to both constipation and seizures. The young man speedily returned to college and is now in active life. A letter just at hand from Dr. McConnell states that this patient "has had no convulsions for more than four years; mental condition normal, and is a strong, healthy young man. I should pronounce him cured."

Case XIV.—Male, aged eleven. (Dr. H. N. Moyer, Chicago, Ill.) October, 1916. Family history was negative. Patient had been constipated from infancy; had had cerebrospinal meningitis at fourteen months; was always nervous and restless. In February, 1916, distinct petit mal with intercurrent twitchings developed. In April the patient had 188 and in May 285 seizures. His mental state was that of persistent and unrestrainable anger. Gastrocoloptosis was extreme, with mobile cecum and adhesions about the cecum and terminal ileum. The conditions were so extreme that an ileosigmoidostomy and primary colonectomy were done. The patient made a speedy recovery; his seizures cleared up after a short time, and, when visited in August, 1919, was entirely well.

Case XV.—Female, aged twenty-seven. (Dr. John G. Reed, Elmwood Place, Ohio.) January, 1916. Family and early personal history was negative except as to constipation from infancy. Patient was married at eighteen; her first child was born one year later; puerperal eclampsia; first seizure, grand mal type, on getting up from this childbirth; seizures recurred every six or eight weeks thereafter for next two years; many intercurrent petit mal seizures. Has had forty-six grand mal and many hundred petit mal attacks during last year. Barium meal was seventy hours + in transit. The transverse colon was festooned until its middle portion rested on the floor of the pelvis, both the hepatic and splenic flexures being normal in position, but the seats of retardative angulation. Operation revealed greatly redundant transverse colon with atrophied muscularis. Eleven inches of the transverse colon was removed with end to end anastomosis. This was followed by parietal implantation. Surgical convalescence was prompt. The seizures persisted with diminishing force and increasing intervals for nearly six months. She had no recurrence of the seizures, but had two babies in the three and a half years that have since elapsed.

Case XVI.—Male, aged thirty-seven. (Cincinnati General Hospital.) October, 1916. All histories negative with exception of rheumatism five years ago. In December, 1915, was sandbagged in the midst of labor troubles, and was taken to the Cincinnati General Hospital, where admission record showed broken nose, concussion of brain, fractured rib, ecchymosis of the face and knee, and bruises of the chest. While there he became constipated for first time in his life. This persisted ever since. A month after his discharge, the patient had first dizzy spells with unconsciousness. These were relieved by laxatives, but soon developed into true grand mal, sometimes two daily, with constant intoxication and great mental depression. General splanchnoptosis of traumatic origin, with both ileal and colonic stasis, was demonstrated. Operation confirmed the diagnosis and revealed, in addition, chronic appendicitis, with numerous visceral adhesions, enlarged lymphatics, marked venous stasis. A physiologic colonectomy was done as a prelude to an anatomic colonectomy. The man made such a prompt recovery and the sinus was so little of an annoyance that he declined the secondary operation. A letter from him received at this writing confirmed the above history.

Case XVII.—Female, aged twenty-five, married. (Dr. Charles Sellers, Hartford City, Ind.) July, 1917. All histories were negative except as to early, constant and intense constipation up to seventeen, when she had her first convulsion; grand mal. The next seizure occurred three years ago following puerperal eclampsia, and numerous heavy seizures and more light ones had occurred since then. There was retarded stomach clearance; retarded duodenal transit; ileal and colonic stasis, and general splanchnoptosis demonstrated, confirmed by operation. Ileosigmoidostomy, parietal implantation, hepatopexy and physiologic colonectomy were then done. The patient made a prompt surgical recovery, and has not since had either constipation or seizures. In July, 1919, I reconnected the descending colon with the sigmoid and made a valve at the point of end to end anastomosis. At this operation I was able to demonstrate the physiological atrophy of the colon from disuse—one of the objectives of physiological colonectomy. This operation also was followed by prompt, uneventful and sustained recovery. This patient writes: "I am enjoying the best health I have ever known."

Case XVIII.—Male, aged twenty-five, Shenandoah, Ia. (Referred by Dr. Fullerton's patient—no physician given.) September, 1916. All histories were negative up to twenty-third year. The patient then began having flashes of unconsciousness several weeks apart. These later became more frequent, and finally occurred daily, until they became typical grand mal. They were brought on by any straining exercise calculated to increase the decensus of the abdominal organs. Bowels were reported regular. Physical and x ray examination showed general visceroptosis. There was retardation of the barium in the stomach, terminal ileum, and at both the hepatic and splenic flexures, the last being dejected at seventy-eight hours. The case was thus demonstrated to be one of "masked constipation." These findings were confirmed by operation, which also revealed constrictive adhesions of the terminal ileum and of the omentum, together with marked ptosis of the liver. Resection of the omentum, fixation of the liver, and parietal implantation were done following release of all adhesions. An appendicostomy was then done to bring the colon under control. The patient made an uninterrupted recovery both as to constipation and seizures, returning two years later to have the appendicostomy closed. Careful physical and x ray examination showed all visceral positions normal. He has since remained well and is now a successful banker.

Case XIX.—Female, aged thirty-six. (Dr. Klickner and Dr. Gibson, Lynchburg, Ohio.) November, 1918. This case, too recent to be classified as a cure, is given not only because the patient is apparently well, but more particularly because it shows extensive mischief in the right upper quadrant, with special involvement of the liver as the result of general splanchnoptosis and the relation of the visceral conditions to the seizures. The patient had had scarlet fever at six, following which there were some twitchings, which passed away. First grand mal attack occurred at eighteen, general splanchnoptosis with ileal stasis persisting after forty-eight hours. These conditions were confirmed by operation, which also showed extensively engorged mesocolic circulation and extensive adhesions in the lower zone. In the upper zone the liver was four inches ptotic; gastroomental veins were black and distended; duodenum was enveloped in exudates and dilated; general adhesions involved duodenum, gallbladder and hepatic flexure. After breaking up all adhesions, a hepatopexy with parietal implantation was done. The patient made an uninterrupted recovery, ceased to be constipated, and had no more seizures.

DELAYED RECOVERIES.

It will have been noted in several of the preceding cases that the trend toward recovery set in only after the lapse of a considerable length of time. This delay, when it occurs, is always responsible for great anxiety on the part of both patient, friends and physician, and, it would seem, cannot be either anticipated or evaded. This was strikingly illustrated in the case of a thirteen year old girl, referred to me in July, 1917, by Dr. Lincoln Phillips, of Cincinnati.

In this case, the constipation was of long standing, while the seizures, grand mal and petit mal, had become both frequent and severe. There was six hours' stomach clearance, marked coloptosis, acute retardative angulation at the splenic flexure, and redundant sigmoid. The abdomen was opened by oblique incision in the left lower quadrant, through which was done a physiologic colonectomy with ileosigmoidostomy and ileostomy, in connection with resection of seven inches of the redundant sigmoid. This patient made an uneventful surgical recovery, but continued to have seizures with marked gastric complications for the next year and a quarter. Then, following adjustment of diet, the seizures ceased, and she has not now had one for fifteen months. Another almost similar case was that of a young man of twenty-five, brought to me by the late Dr. J. M. Barstow, of Council Bluffs, Ia., in June, 1916. In this case there was little sign of improvement for thirteen months. The patient writes: "We were just about ready to give up all hope when, in July, 1917, suddenly and for no apparent cause, the seizures ceased, and I have enjoyed almost perfect health since then."

REFERENCES.

1. Glenard, Frantz: *Les ptoses viscerales* (estomac, intestin, rein, foie, rate), diagnostic et nosographie (entéroptose, hépatisme), ix, 7-977, 8vo. Paris, F. Alcan, 1899. See, also, Mentennis, A.: *Les déséquilibrés du ventre*, 12vo, Paris, 1894.

2. Cotton, Henry A.: The Relation of Focal Infection to Mental Diseases, New York Medical Journal, April 24, 1920, p. 724.

3. Constipation and Epilepsy, Cincinnati *Lancet-Clinic*, July 25, 1914.

4. The Probable Cause and Logical Treatment of Epilepsy. Preliminary report read before the Los Angeles County (Cal.) Medical Association, February 18, 1915. *Journal of the American Medical Association*, March 27, 1915.

5. Diagnostic Methods and Pathological Constants in Idiopathic Epilepsy. Second Report. Remarks before the Seventh Pan American Medical Congress, San Francisco, June 19, 1915. Read before the Columbus (Ohio) Academy of Medicine, September 27, 1915. *Journal of the American Medical Association*, January 29, 1916.

6. Reed, Charles A. L.: Treatment of Constipation by Conservative Surgical Correction of Retardative Displacements of the Colon. Read before the Section on Obstetrics, Gynecology, and Abdominal Surgery, American Medical Association, June, 1916. *Journal of the American Medical Association*, September 20, 1916.

7. Reed: *Journal of the American Medical Association*, March 28, 1914.

The Interpretation of Blood Pressure Variations*

With Observations on Normal Pressure Variations and the Relation of the Adrenals and the Autonomic Nervous System to the Production of Blood Pressure

By HOMER WHEELON, M. D.,
St. Louis, Mo.

A correct interpretation of the clinical significance of blood pressure variations must of necessity presuppose a thorough knowledge of the factors involved in the production and control of a normal blood pressure and the degrees of variation in pressure compatible with a balanced economy of the body as a whole. The purpose of this paper is to set forth certain experimental observations relative to the production and control of a normal pressure, and to apply the physiological principles derived therefrom as interpretative measures in a consideration of the clinical variations of blood pressure findings.

The term normal blood pressure may be taken to imply not only average figures but also the limits of variation as recognized clinically and experimentally compatible with normal functioning of the body as a whole. The term should also convey the idea that blood pressure is not and cannot be a fixed factor, for the reason that it, at any moment, is the result of a combination of variable forces which enter into its production.

The range of blood pressure variations compatible with a normal economy is illustrated by readings made upon sixty-six normal medical students and twenty-two aged women. The pressure readings were made during the morning hours, 8:00 to 11:00 or at a time when the pressure was rising from its greatest diurnal depression. Figures were also obtained to show the effects of posture and exercise on the blood pressure and the heart and respiratory rates.

The ages of the sixty-six men lay between twenty and twenty-eight years, hence, according to the usually accepted standard of normals, the systolic pressure should have ranged between 120 and 125 mm. of mercury. As shown in Fig. 1 the average systolic pressure of these men was 116 mm. in the recumbent posture. Upon assuming the sitting posture the pressure rose to 120, and to 122 mm. in the standing position. After exercise—five minutes stationary running—the pressure rose to 139 mm. The average diastolic pressure for the same four conditions was 75, 76, 82 and 86 mm. These figures are within the range of the accepted normals. However, the point of interest in this set of figures is the degree of individual variations which, observed by averages, caused the class as a whole to be put within the limits of accepted normal figures. Systolic readings ranged from 92 to 150 mm. for the recumbent position; 104 to 160 for the sitting posture; 98 to 160 for the standing position, and 115 to 196 following exercise. The diastolic pressure variations for the same conditions were: Lying, 60 to 90; sitting, 58 to 105; standing, 62 to 102; after exercise, 64 to 104. The heart rate accompanying these pressure readings was 73, 80, 92 and 125 a minute; respiration, 16, 18, 20 and 24 (Fig. 2).

Of the sixty-six men only two showed evidences of a disturbed cardiovascular apparatus. Of these two men, one showed a high pressure—160 systolic—but was unaware of the condition. This pressure was reduced to 135 mm. within four weeks by the daily administration of small amounts of baking soda and magnesium sulphate. The second case demonstrated an unusually unstable vasomotor control and wide variations in the pressure readings at different times.

These figures are of peculiar interest when compared with those obtained upon the twenty-two women beyond the age of fifty years—average seventy-six years—eight of whom showed evidences of arteriosclerosis or kidney disturbances. None of the twenty-two women were suffering from acute disturbances; all were up and about and enjoyed health usual to their age. The average systolic pressure of the twenty-two readings obtained with the subject in the recumbent position was 161 mm.; standing, 156 mm.; after exercise—five minutes rapid walking—166 mm. The average diastolic pressure for the same conditions was 89, 89 and 81 mm. The range of systolic variations was: Lying, 98 to 230 mm.; standing, 196 to 252 mm.; after exercise, 135 to 255 mm. Diastolic variations were 60 to 120 mm.; 75 to 118 mm.; and 54 to 115 mm. (Fig. 1).

From these figures it will be observed that marked variations in the blood pressure are shown between the two groups as a whole and in the individuals of the same group in the various postures and following exercise. In the men a change from the horizontal to the upright position resulted in a slight rise in both the systolic and diastolic pressures, while a similar postural change in the aged resulted in a perceptible lowering of the systolic pressure unaccompanied by a diastolic variation. Among the young adults exercise resulted in a sharp rise in the maximal pressure and a slight rise in the minimal pressure, while in the aged exercise resulted in a sharp rise in the maximal pressure and a marked depression of the minimal pressure. The degree of exercise in the two groups was, of course, not comparable. It was observed, however, that normal men gave similar readings—depression of the diastolic pressure—after having spent the morning in the laboratory. Similar results occurred in a certain number of men following the five minutes of stationary running. As shown in Fig. 1, individual variations in pressure were considerably greater in the aged woman than in the young men; the range of individual variations in both groups shows a preponderance of pressure variations above the average for the group.

---

*Read before the St. Louis Medical Society, February 15, 1921.

From a practical viewpoint two fundamental factors may be considered directly responsible for the production of alterations in blood pressure, viz., first, alterations in the rate and force of the heart beat, and, second, alterations in the peripheral resistance or size of the stream bed. The structures involved in the production of these two conditions are directly under the control of a regulatory nervous mechanism, hence, clinically, we may look upon pressure variations as the result of an altered balance in this regulatory apparatus.

INFLUENCE OF THE HEART ON BLOOD PRESSURE.

A blood pressure in a state of equilibrium is but sufficient to force a given amount of blood into the capillaries during a given period of time. It follows, therefore, that an accumulation of blood in the arteries, and consequently an increased pressure, will occur as the result of an increased heart rate.

The result of such a rise in pressure is an increased velocity of the stream and outflow of blood until such a time as equilibrium is again restored—this occurring at a higher pressure level. Similarly, the rate of the heart remaining the same, an increased pressure follows a more complete emptying of the ventricle (force of the heart beat). The result of such a pressure elevation is to force the blood more rapidly through the capillaries until such a time as the inflow becomes equal to the outflow, equilibrium being gained at a higher pressure level. On the contrary, a decrease in the rate and force of the heart, when the pressure is in a state of equilibrium, leads to a decreased delivery of blood to the arteries in a given unit of time. This will of necessity result in a lessened quantity of blood in the arteries, a decrease in arterial distention, a diminished velocity, and a depressed pressure, for the reason that the capillary outflow is greater under the existing pressure than the inflow from the heart. The pressure will therefore remain below normal until such time as the outflow no longer exceeds the inflow.

Excitation of the cardioaccelerator centres sufficiently strong to offset or diminish the activity of the cardioinhibitory centres, results in an increased cardiac rate. Such excitation may follow the reception of impulses received from the cerebrum, as in emotional states, or from the excitation of nerves in any part of the body. For instance, the stimulation of the central stump of a severed vagus or sciatic nerve, or the distal stump of the cardioaccelerators, will give rise to an increased heart rate associated with an elevation of blood pressure. This latter phenomena, however, is primarily due to a concomitant excitation of the vasomotor centres. Complete inhibition of the cardioinhibitory centre may be shown to result following division of its afferent fibres in the vagus trunks, in which case the heart rate increases because of the unopposed action of the accelerator centre. Such experimental procedures have their analogues in those pathological and operative conditions which involve the terminals of afferent nerves. Whether or not a rise or fall in blood pressure will occur following alterations in the cardiac rate will depend on the presence or absence of other factors connected with the disturbing element.

A decrease in the heart rate follows an increased activity or irritability of the cardioinhibitory centre. Similar alterations may follow as the result of a decrease in the function of the opposing centres. Reflex excitation of the cardioinhibitory centre, whether from the higher or lower segments, results in an accentuation of its normal function, thus checking or decreasing the heart rate and to this extent antagonizing the cardioaccelerator centres. Experimentally it can be shown that stimulation of the distal stump of the severed vagus will cause either a decrease or complete cessation of the heart rate and a consequent fall in blood pressure. A similar depression of the heart may follow stimulation of the cardioinhibitory centres because of the excitation of afferent nerves throughout the body. (Fig. 3.)

From this consideration of the nervous control of the heart it appears that either of the two opposing centres may be excited or depressed because of impulses delivered into them from higher or lower segments. Hence, given a stimulation, one of two possibilities may occur in the heart rate; it will become either accelerated or depressed. The factors involved in the determination of either result are possibly to be ascribed to the habit of reflex action of the individual, the degree of resistance of the centres, the irritability of the centres, and the selective or integrative action of the nervous system as a whole. That such factors are present is indicated in the directly opposite reactions of two individuals subjected to the same stimulus; one may faint under stress, while another is goaded to unusual muscular activity.

To illustrate: Fourteen men in a class of sixty-six medical students responded to pressure on the infraorbital nerve—orbiculocardiac reflex—by an increased heart rate of four beats a minute, while the remaining fifty men gave an average decrease in the heart rate of seven beats a minute. Gentle tapping of the abdomen resulted in an increased pulse rate of thirty-one beats a minute in forty men; in the remaining twenty-five men there occurred an average drop of seven beats a minute. Stimulation of the dorsal nerve of the foot raised the heart rate five beats in sixty-two men and lowered it eight beats in three men. Sipping water resulted in an increased heart rate of nine beats a minute in fifty-nine men and in seven men a decrease of six beats. In all of the men save two the eating of a heavy meal and the inhalation of cigarette smoke caused an average increase in the heart rate of ten beats a minute. (Fig. 3.) In eight men, as shown in Table I, a state of apprehension preceding their initiation into a fraternal society, caused the pulse rate to show an average increase of fifteen beats a minute. The range of variation in the heart rate among the individual men was forty-four beats. Such variations in a class of normal men, it seems to me, are strongly indicative of the habits of reaction of the individual rather than the presence of pathological functioning. This point was further borne out in these same men in relation to their other reflexes and to the findings in gastric analyses.

INFLUENCE OF THE VASOMOTOR APPARATUS ON BLOOD PRESSURE.

The physiological alterations in resistance to the flow of blood are directly dependent upon the degree of tonicity or contracture of the vascular musculature. The degree of arterial tonicity, on the other hand, may be taken as the evident manifestation of the functioning of the vasomotor apparatus, the purpose of which is to maintain a pressure throughout the arterial tree and regulate the delivery of blood to the organs irrespective of the influence of hydrostatic pressures or gravity.

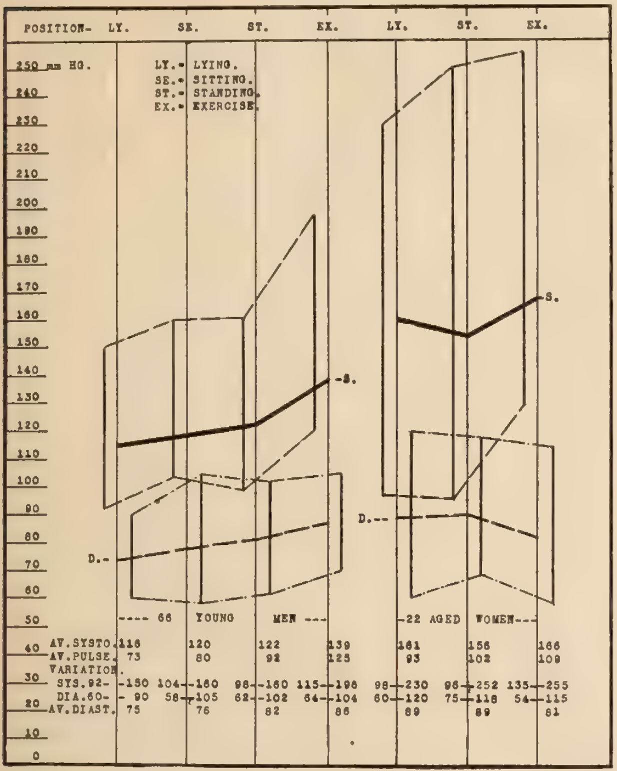


FIG. 1.—Diagrams showing the effect of posture on an average blood pressure and the maximal range of individual variations from the average.

The vasodilator and constrictor centres, like those centres regulating the heart, are open to reflex excitation either from the cerebrum (psychic states as in fear, anger, fright and sorrow) or from the excitation of afferent endings. Excitation of the vasoconstrictor centre results in an increased tonicity of the arterial walls and coincidentally a rise in blood pressure. Following the withdrawal of such excitation the centre returns to its former degree of activity, arterial tonicity decreases and the pressure falls to its normal level. On the contrary, relaxation of arterial tone—increase in the size of the stream bed—results in a fall of pressure for the reason that the outflow of blood is increased even though the rate and force of the heart remain unchanged. Relaxation of arterial tone and the consequent decrease in peripheral resistance may follow either as the result of decreased activity in the vasoconstrictor or because of heightened activity of the vasodepressor centres.

It is a relatively simple procedure to demonstrate the physiological presence of cardiovascular nervous regulatory centres; on the contrary, while we see a correlation between the functions of these various centres, it becomes a matter of no small difficulty to establish the possible means of intercommunication that theoretically are believed to exist in this regulatory mechanism. It is possible that such interrelated acts are reflex in character. That such is possibly the case is illustrated by the following: A sudden increase in the peripheral resistance much above the usual level for the individual results in a decreased heart rate and an attempt on the part of the vasomotor apparatus to reduce the pressure to its former level. Sudden distention of the base of the heart and aorta, when the vagi are intact, results in a slowing of the heart. On the contrary, section of the vagi prevents such heart rate changes and permits of a continued elevated pressure and increased heart rate. From such observations we may conclude that the vagi carry fibres which are excited because of distention of the base of the heart to the cardiodepressor centres. From the centre impulses are delivered into the heart by way of the vagi which depress the rate of the heart and possibly excite vasodilator centres or depress the action of the vasoconstrictor centres (Fig. 4). This phenomenon is the equivalent of any protective reflex, and may be used as an illustration of the reflexes involved in the stabilization of the normal pressure. A decrease in the peripheral resistance reflexly leads to an increased

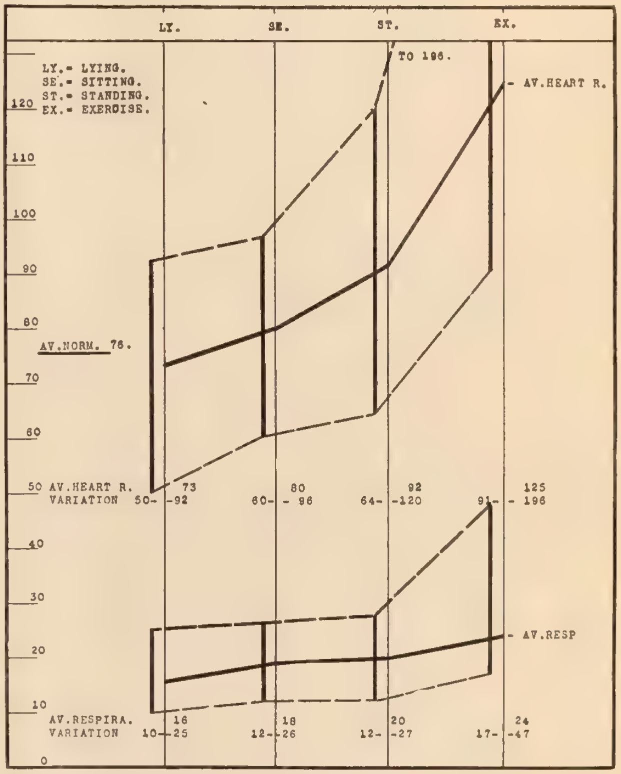


FIG. 2.—Diagram showing effect of posture and exercise on an average heart rate and respiration and the maximal range of individual variation from the average normal as observed on sixty-six young men.

heart rate either because of depression of the activity of the cardioinhibitor or because of excitation of the cardioaccelerator centres. Such a condition results in an accentuated heart rate, although the individual beat delivers less blood. Also, an increased heart rate may be associated with a practically normal pressure because of a compensatory reaction in the arterioles to maintain pressure at such times as the venous return to the heart is embarrassed. However, in a general way, we may state that a fall in blood pressure is attended by an increased heart rate and a rise in pressure by a decreased rate; the two conditions are analogous to the processes of reciprocal innervation as observed in the contractile tissue of locomotion. While it is not possible to assume that any one factor involved in the production of blood pressure is of greater importance than any of the others, the relative importance of the controlling nervous factors may be illustrated by the following experiments:

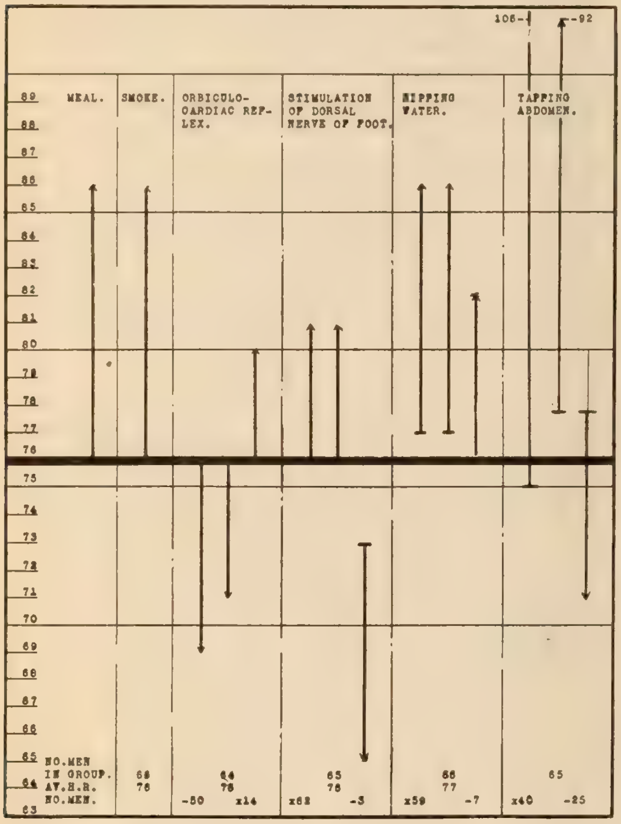


FIG. 3.—Diagram illustrating the difference in heart rate among young men subjected to the same type of stimuli.

Nicotine,[1] in small amounts, when placed in the blood stream normally gives rise to a characteristic vasomotor response (Fig. 5). Such responses are characterized by three positive and three negative waves of variation disposed as follows: 1, A primary fall of pressure associated with a slow heart rate (wave D I) followed by, 2, a sudden rise in pressure associated with a rapid heart rate (wave P I); 3, a secondary fall of pressure associated with a slowing of the heart rate (wave DII), followed by, 4, a secondary rise of pressure (wave P II); 5, a tertiary fall of pressure (wave DIII) and, 6, by a tertiary rise of pressure which establishes the second normal level or brings the pressure producing factors into a state of equilibrium (wave P III). These six variations are usually demonstrable. There appear to be many conditions, however, in which the injection of nicotine does not result in the typical curve described.

The first depressor wave (D I) appears as the first vascular response to the exhibition of nicotine and may show a fall in pressure greater than fifty per cent. of the normal. The first positive pressure response (D I) begins during the period of the primary fall from which point the pressure is brought to and far above the normal—maximal pressor response. This rise in pressure is associated with a rapid heart rate. The decline in pressure from its first pressor response is interrupted by the second positive wave (P II) which may develop a pressure as high or higher than the primary pressor rise. Usually, however, the second positive phase is less than the primary one when the observations are being carried out on an animal under the influence of ether. At times the two pressor waves become fused so as to hold the pressure at a high elevation for a considerable period of time. Following the second positive phase, the pressure rapidly falls (D III) and often is forced below the normal level from which point a second constant level (N II)is established usually by a gradual rise in pressure. Such curves indicate, therefore, that nicotine, directly or indirectly, excites both pressor and depressor factors involved in the production of a blood pressure. The interpretation of the vascular and cardiac changes resulting from

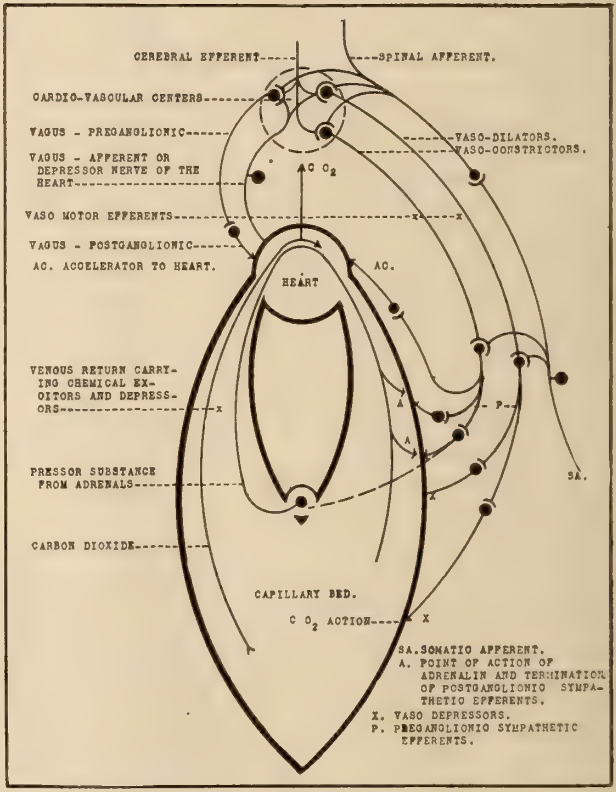

CEREBRAL EFFERENT.
SPINAL AFFERENT.
CARDIO-VASCULAR CENTERS
VAGUS - PREGANGLIONIC
VASO-DILATORS.
VASO-CONSTRICTORS.
VAGUS - AFFERENT OR DEPRESSOR NERVE OF THE HEART
C O2
VASO MOTOR EFFERENTS
X
X
VAGUS - POSTGANGLIONIC
AC. ACCELERATOR TO HEART.
AC.
HEART
VENOUS RETURN CARRYING CHEMICAL EXCITORS AND DEPRESSORS
X
A
A
P
PRESSOR SUBSTANCE FROM ADRENALS
SA.
X
CARBON DIOXIDE
CAPILLARY BED.
C O2 ACTION
X
SA. SOMATIC AFFERENT.
A. POINT OF ACTION OF ADRENALIN AND TERMINATION OF POSTGANGLIONIC SYMPATHETIC EFFERENTS.
X. VASO DEPRESSORS.
P. PREGANGLIONIC SYMPATHETIC EFFERENTS.

FIG. 4.—Diagram of the cardiovascular nervous control.

---

[1] The statements relative to the action of nicotine on the vasomotor apparatus are based upon the results of uncompleted experiments conducted by Dr. J. Earl Thomas and myself.

the exhibition of nicotine is materially facilitated by further experimentation.

Following severance of the vagus nerves in the neck the primary depressor wave (D I) does not occur, hence the first effect of nicotine is to excite the cardioinhibitory apparatus, i.e., the vagus. Vagus paralysis, however, does not prevent the occurrence of the remaining phases of the vascular response, although the pressure remains higher and the heart rate faster. This latter phenomenon may be looked upon as the result of an unopposed accelerator centre and the absence of impulses over the depressor nerve of the heart and aorta.

Decerebration of the animal (dog) results in a fall of from twenty to fifty per cent. in the systemic pressure and a total loss of the first two waves (D I and P I waves). In such experimental conditions the secondary pressor response occurs and the depressor effect (wave D III) may be so marked as to result in a pressure equilibrium far below the normal for the decerebrated condition.

The second pressor response does not occur following adrenalectomy, however, the first and second depressor and the first pressor waves occur as previously (Fig. 5). Removal of the adrenal glands (dogs) results in a loss of from twenty to fifty per cent. of the normal pressure. If added to the removal of the adrenal bodies the medullary centres are destroyed and there follows a loss in pressure of as much as seventy-five per cent. In such animals the administration of nicotine, one c. c. of a one in 1,000 solution, does not result in the production of either pressor or depressor waves. However, a massive dose of nicotine in decerebrated and adrenalectomized dogs is followed, after a long latent period, by a slow rise in pressure. Similar responses do not follow a second dose of the same amount this indicating that the peripheral ganglia and cord, although capable of response to nicotine, are functionally destroyed by the dose of nicotine required to excite them. The exhibition of adrenalin, on the other hand, in such conditions is followed by a prompt and marked rise in pressure, so also is the pressure raised by the presence of pituitrin.

Interpretative experiments of this nature lead to the conclusion that nicotine alters the blood pressure because of its direct or indirect action on the cardioinhibitory and accelerator centres, upon the vasomoter centres, upon the cord and sympathetic ganglia, and either directly or indirectly on the adrenal bodies.

The experiments and conclusions reported above are justifiable only for the conditions under which they were carried out; they simply show how the blood pressure may be altered because of the excitation of factors normally involved in the production of a pressure. This point I wish to emphasize presently in relation to the conclusions warranted because of the experiments on the adrenal glands.

THE INFLUENCE OF CHEMICALS ON BLOOD PRESSURE.

Experimental and clinical studies have shown that factors other than nerves are capable of altering the size of the blood vessels and the rate of the heart. Chemical factors, under which are included the products of organs of internal secretion, are known to cause alterations in the distribution of the blood either because of their action directly on the musculature of the vessels or because of their action at various points in the nervous regulatory system. The results of such chemical substances are dependent entirely upon the pharmacodynamics of the drug. For instance, sarcolactic and carbonic acids, in slight concentrations in the tissues, cause a local vaso dilatation. On the other hand, an increase in the carbon dioxide content of the blood, resulting from a rapid metabolism, excites not only the respiratory but also the vasomotor centres. Excessive increases in the same substance result in a partial or complete paralysis of the pressure regulating mechanisms. Therapeutically many chemical substances, when placed into the circulation, either cause a constriction or relaxation of the arterial walls and alterations in the rate and force of the heart.

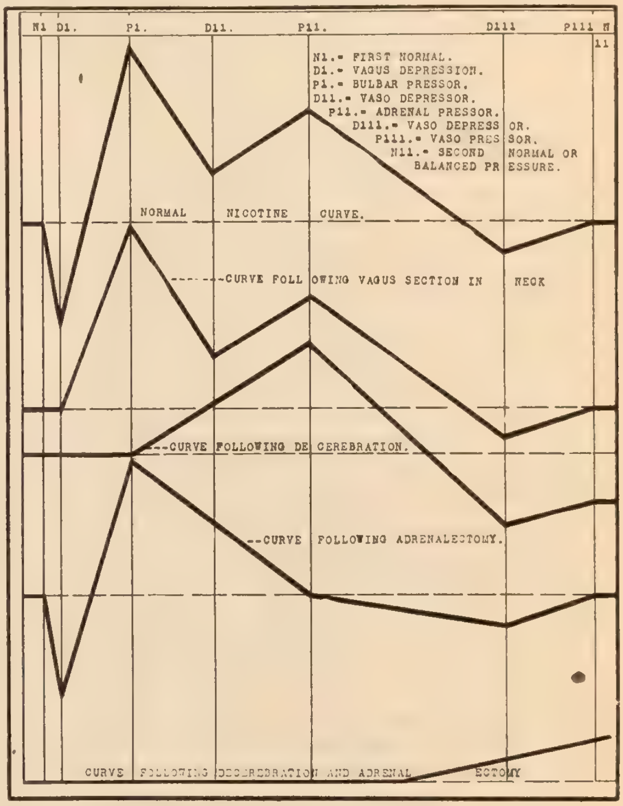


Fig. 5.—Diagram illustrating the influence of nicotine (one c.c. of a one in a thousand solution) on the vasomotor apparatus in the normal, decerebrated and adrenalectomized dog; ether anesthesia.

At the present time one is continually brought in contact with the theory that alterations in blood pressure are the result of an over or under functioning of endocrine organs. Especially is this true in relation to the adrenal bodies. I offer no affrontery when I say the bewildering maze of organized and unorganized theories and data, the claims pro and con, the exuberant hopes of the enthusiast and the criticisms of the conservatist relative to the endocrines at the present time are sufficient to cause one to throw up his hands and ask: Where lies the truth; where and what is the principle of the internal secretions? The future is ours and from it will come the calm of a tried endocrinology just as the present status of the theory of cerebral localization represents the crystalization of a previous enthusiasm known as phrenology.

We may justly ask, What is the relation of the adrenal principle to blood pressure? In this connection it is of interest to recall, as shown by O'Hare (1), that cases in which the blood pressure is already high, the vasomotor system is especially sensitive to the action of adrenalin. As far as the experiments reported above are concerned we are justified in concluding that the adrenal bodies are in some way responsible for the second pressor wave following the administration of nicotine. Such a finding is not to be wondered at when it is recalled that stimulation of the peripheral stump of the splanchnic nerves results in a pressure change the graphic records of which show two positive phases. The first positive wave has been shown to result because of excitation of the vasoconstrictor fibres in the nerve trunk, the second as the result of discharge of material from the adrenal glands which, acting upon the sympathetic endings, causes a rise in pressure. That this is so is shown by the removal of the adrenals in which the "dip" and the second positive wave does not appear (2). Similarly, as Dr. J. E. Thomas (3) and I have been able to show, an excitation of the splanchnics results in an augmented motor phenomenon in the stomach at the time of the first positive blood pressure wave and a marked inhibition of gastric motility during the presence of the second pressor response in the vascular system. However, removal of the adrenals resulted in a partial loss of gastric inhibition following splanchnic stimulation.

In the experiments cited it will be noted that the adrenal response comes as a secondary phenomena, that is, it follows the primary pressor response which results from vasomotor excitation. Hence, the oft repeated question: Is the adrenal substance acted upon directly by the exhibition of nicotine or splanchnic stimulation or does the increase in pressure resulting because of vasomotor excitation simply free the suprarenals of their content of pressor substance? Experimental evidence offers presumptive evidence that stimulatory drugs to the vasomotor apparatus or arterioles if sufficiently repeated may bring about a condition of elevated arterial tension. It is also conceivable in the light of our present information that strong emotional states and stimulation of the sympathetic nervous system will cause an elevated pressure and liberation of adrenal principles. In such cases the adrenal action on blood pressure follows as the result of the primary rise in pressure and not as the cause. Therefore, it seems more correct to assume that a given high pressure will tend to continue itself because of the rapid emptying of the adrenals of the blood pressure raising properties rather than to assume that the pressure is the direct result of excitation of the adrenal bodies. On this basis a high blood pressure could be looked upon as a possible factor in the production of lowered adrenal function. If the adrenals are primary factors in the production of elevated pressure then why should senility so often be associated with hypertension and arteriosclerosis? Is it true that the adrenals, like the prostate, hypertrophies functionally, as one of the sequences of age, and in so doing associates itself with an elevated blood pressure? As a matter of fact the weight of the adrenals becomes progressively less after middle life. Perhaps the adrenals do play some part in the augmentation of sympathetic reactions under conditions of stress (10), but there is little evidence that a balanced blood pressure requires their presence, at least as far as the vasomotor apparatus is concerned.

Hoskins and McClure (4) did not demonstrate a fall in blood pressure following ligation of the adrenal vessels. Furthermore, they demonstrated that an amount of adrenalin in the circulation sufficient to affect blood pressure was enough to cause suppression of intestinal peristalsis. It has also been shown that very weak concentrations of adrenalin in the blood stream act as vasodilators (5) (11). The fact that blood pressure may be raised clinically by the use of derivatives of the suprarenal glands, or that the pressure falls because of diseased conditions of the glands, does not of necessity indicate or prove that states of hypertension or hypotension are the result of dysfunction of the adrenal glands any more than the appearance of cardiac decompensation denotes the absence or reduction of a normal amount of circulating digitalis (Hoskins). Moreover, in the experiments reported above the loss of pressure following adrenalectomy can be explained as the result of an excessive excitation of the vasodilator factors or partial paralysis of the vasoconstrictor factors as to assume that it follows because of adrenal want. Further, the repetition of nicotine injections in a normal dog results in the gradual reduction and final disappearance of the secondary pressor response. Clinically a state of hyperfunction of the adrenals has been held responsible for the production of hypertension and arteriosclerosis. At the present time there is little or no evidence that in man hypertension, whether associated with glomerular nephritis or with arteriosclerosis, is in any way dependent upon an excess of adrenalin in the vascular system.

States of low arterial tension are often considered the result of a condition of hypoadrenalemia. Experimentally it may be shown that the presence of physiological concentrations of adrenalin in the blood stream results in a fall of blood pressure. If this latter statement is true, then it appears that a diminution of the activity of the adrenal glands would result in an increased pressure because of the removal of its depressor action. An adrenal want, therefore, might be an underlying factor responsible for an elevated or overcompensated blood pressure. The very opposite of this statement is the one now accepted, that is, an overactive adrenal is supposed to give rise to an increased arterial tension. In a recent paper by Dr. Wm. Englebach (6), from his citations of the literature and the presentation of forty-six cases of "arterial hypertension associated with endocrine dyscrasia," indirectly leaves the impression that the adrenals may overact following the withdrawal of certain internal secretions which normally depress its activities. However, in his classification of the forty-six cases none are represented as of adrenal origin while thirty-seven are classed as representative of hypofunctioning of the pituitary, thyroid and gonads, and nine as hyperfunctioning of the thyroid (8) and pituitary (1). In other words, an endocrine insufficiency was held responsible for the high pressure in the greater majority of his cases. The author also implies that the pressure in such cases is reduceable by the administration of vasoconstrictor substances, i. e., adrenal and pituitary extracts and the removal of the thyroid in cases showing disturbances of this gland.

The findings and suggestions offered in the citation given above are of special interest for they tend to demonstrate that hypertension associated with endocrine disturbances is probably not directly the result of endocrine activity or inactivity but rather an altered metabolism resulting from an unbalanced endocrine system which permits of the formation of substances which are in themselves excitatory to the cardiovascular apparatus and its regulatory nervous system. In other words, it appears that hypertension follows as a secondary consequence of an altered metabolism and not as the result of an unopposed adrenal gland. If adrenalin, the pharmacodynamics of which, as far as the blood pressure factors are concerned, is to raise blood pressure, is actually found able to lower a high endocrine pressure, then certainly the adrenals cannot be held responsible for the high pressure present in such cases. Certainly we would not expect a constrictor drug like adrenalin or pituitrin to lower pressure because of its action on the vascular apparatus. On the other hand, if such drugs do actually bring down a high pressure it may be conceived that they do so, not by acting on the vascular apparatus, but on or against factors which, present in endocrine dyscrasia, do excite or permit pressure elevations.

The symptoms of progressive circulatory weakness, low blood pressure and asthenia so often observed in the acute infections, are usually interpreted to mean an acute adrenal insufficiency. Somewhat similar symptoms develop in dogs following adrenalectomy. However, as shown by Hoskins and myself (7), removal of the adrenals, while proving rapidly fatal, in no wise alters the functioning of the cardiovascular nervous apparatus, neither does it bring about a lowering of the blood pressure at such a time as cardiac weakness is strongly in evidence. Death in these animals was not attributable to the loss of a pressor substance from the adrenals which maintained blood pressure through its action on the cardiovascular nervous apparatus, but to the extreme myasthenia which ultimately involved not only the skeletal and respiratory muscles but also the heart. Adrenal want therefore resulted in asthenia and not in a diminished activity of the vasomotor apparatus.

Recently Gruber (8) (9) has shown that adrenalin counteracts the muscular fatigue or myasthenia produced by the previous injection of fatigue substances and concludes that the asthenia following removal of the adrenals is the result of an adrenal want. Such observations lead to the belief that the alterations and final cessation of function of the cardiovascular apparatus following adrenalectomy is not to be ascribed to a loss of a pressor substance but rather to the loss of a substance which tends to neutralize fatigue substances and prevent the development of asthenia.

From the foregoing considerations it becomes evident that a balanced blood pressure depends not only upon physical properties, such as blood volume, resistance, viscosity, size of the stream bed, and gravity, but also upon physiological properties which are influenced or controlled by a nervous regulatory mechanism. Such physiological factors are vascular tonicity, alterations in the size of the stream bed with associated alterations in pressure, rhythmic propulsion of blood by the heart, and the property of elasticity or recoil of the arterial walls following distention because of the reception of blood during the cardiac systole, and the integrative action of the nervous system.

CLINICAL CONSIDERATIONS.

The complexity and degree of specialization of the blood pressure regulatory apparatus is such as to permit of relatively easy variations. Such alterations if continued may constitute the picture of clinical findings, i. e., a broken or unbalanced control. However, such pressure variations are not the result of new physiological principles but rather represent the influence of an altered economy on certain of the principles underlying the production and control of a normal pressure.

For practical purposes alterations in blood pressure result because of either a change in the rate of the heart or an alteration in the peripheral resistance, or both. A condition of hypertension, therefore, may be looked upon as the physiological result of overactive cardioaccelerator and vasopressor centers or inhibition of the cardioinhibitor and vasodepressor centres, or to a decrease in the expansile power of the vascular musculature. That is, pressure may be raised by an increased heart rate and force, a general constriction of the arterioles, or by a combination of both. Such elevations of pressure may be transient or chronic.

In most forms of transient arterial hypertension, save that following exercise which is mainly the result of an increased heart rate, the rise in pressure appears to result because of increased peripheral resistance. A transient rise in pressure is often traceable to an increased carbon dioxide tension, or low oxygen concentration of the blood. For instance, vascular contraction from asphyxial changes following anemia of the vasomotor centres may occur during cardiac decompensation and acute cerebral compression. The elevation of pressure associated with vascular crises, especially those of the vasomotor form of paroxysmal pulmonary edema, paroxysmal dyspnea, tabetic crises, lead poisoning and angina pectoris either may be assumed to follow as the result of pain or from an imperfect aeration or carbon dioxide increase. On the other hand, it is possible that the pain is the result and not the cause of an increased pressure and cerebral anemia. In either case the primary rise of pressure is the result of an increased peripheral resistance.

The transient elevations of pressure in acute nephritis, especially that involving the glomeruli, uremia and eclampsia cannot be ascribed to anatomical changes in the arteries, save possibly those in the kidney, for the reason that in such cases, although the pressure develops rapidly and may reach an alarming point, a normal level is reached with the disappearance of the disease. This return to normal is indicative of a functional rather than an anatomical change. Transient elevations in general may be looked upon either as the result of reflex causes or the action of toxic substances upon both the vasomotor centres and the vascular musculature directly.

The immediate cause of an elevated pressure in chronic, as in transient hypertension, is the result of an increased resistance to the escape of blood from the arterial tree. That the heart is not primarily responsible for such chronic elevations in pressure is shown by the fact that the blood flow is not materially increased and that cardiac hypertrophy in the early stages is confined to the left ventricle alone. If the heightened pressure was due to an increased viscosity of the blood—friction resistance—and outflow from the heart both ventricles would do an increased amount of work; both should, therefore, show hypertrophy.

TABLE I.

EFFECT OF APPREHENSION ON THE HEART RATE AND THE SYSTOLIC AND DIASTOLIC PRESSURE.

									Average.	Variation.	
No. of Man	1	2	3	4	5	6	7	8			
Age	26	19	22	23	30	21	21	19			
Systolic Blood Pressure:											
Normal	106	128	123	102	120	132	118	124	119	102—128	26
Preinitiation	140	175	146	128	140	144	138	145	144	128—175	47
Variation	+ 36	+ 47	+ 23	+ 26	+ 20	+ 12	+ 20	+ 21	+ 25		
Diastolic Blood Pressure:											
Normal	80	72	86	82	72	84	54	54	73	54— 84	30
Preinitiation	60	75	80	85	70	80	64	45	69	45— 80	35
Variation	— 20	+ 3	— 4	+ 3	— 2	— 4	+ 10	— 9	— 4		
Pulse Pressure:											
Normal	26	56	37	20	48	48	54	54	43	20— 56	36
Preinitiation	80	100	66	43	70	64	74	100	75	43—100	57
Variation	+ 54	+ 44	+ 29	+ 23	+ 22	+ 16	+ 20	+ 46	+ 32		
Pulse Rate:											
Normal	90	80	108	78	90	78	96	96	89	78—108	30
Preinitiation	92	126	110	110	100	94	92	100	104	92—126	44
Variation	+ 2	+ 46	+ 2	+ 42	+ 10	+ 16	— 4	+ 4	+ 15		

All determinations made with the individual in the sitting posture.

Chronic hypertension is often found associated with renal disturbances, but kidney changes cannot be regarded as the sole direct cause of the condition. Chronic hypertension without renal disease is entirely possible. Chronically high pressures are often associated with sclerosis of the larger arteries. Arteriosclerosis, however, especially of the larger arteries, does not necessarily mean hypertension. Normally the resistance offered by the large vessels is insignificant as compared with that of the bed of the arterioles and capillaries. Hence, rigidity of the musculature involved in the larger vessels would be of little consequence in elevating blood pressure. Sclerosis of the main arteries is often associated with similar changes in the smaller vessels as, for instance, in chronic interstitial nephritis. A general sclerosis of the arteries is probably never present in cases of chronic hypertension, for the reason that the individual's pressure may still be further elevated by the administration of pressor drugs or lowered by vascular depressants. Further, the occurrence of local and general vascular crises in chronic hypertension indicates that the high pressure, at least in part, is the result of an increased arterial tonicity. Moreover, it appears justifiable to assume that functional changes in the arterioles antedate and are possibly causative factors in the production of sclerosis, or that a common cause underlies the two conditions.

It appears that functionally chronic hypertension is primarily the result of an increased peripheral resistance resulting from either reflex or chemical—toxic—action upon the vessels directly and the vasomotor apparatus. Hypotension, whether acute or chronic, physiologically is due either to an increased flow from the arterioles and capillaries, decreased resistance, to a diminished output from the heart, or to both.

A diminished output of blood from the heart will follow the collection of blood in the various systems, especially in the splanchnic area, or will result from a primary cardiac weakness. A similar condition exists following a marked reduction—hemorrhage—in the amount of circulatory fluid. These three conditions are often associated with a normal or slightly elevated pressure because of compensatory constriction of the peripheral arteries. A change in posture in certain individuals results in a sharp decline in the blood pressure associated with syncope. In such cases the hydrostatic pressure of the blood is sufficient to offset a low vascular tone, that is, the blood takes dependent portions upon changes of posture because of a vasomotor apparatus not sufficiently strong to keep the blood equally distributed. The resultant syncope may be looked upon as the result of cerebral anemia. Heart block and an excessively rapid heart may give rise to a low arterial tension because of diminished ventricular output. A diminished ventricular output due to cardiac inhibition associated with a rapid relaxation of the splanchnic arterioles—vasodilatation—is probably the cause of the low blood pressure in attacks of emotional syncope. The condition known as shock may ultimately lead to a reduction of the blood pressure, but such a reduction is not to be ascribed to a paralysis or inhibition of the vasomotor centres, but to an inhibition of the normal tonus of the veins of the splanchnic region which permits of a decreased delivery of blood to the heart. This reduction in the amount of blood returned to the heart is compensated for by a constriction of the arterioles until such time as the arterial stream contains less than one-third of the normal quantity of the blood after which a rapid fall in pressure occurs. This condition is the equivalent of a severe hemorrhage, in fact it is a fatal hemorrhage into the individual's own venous reservoirs. Our present information as to the etiology of shock is obscure and from a physiological point of view far from satisfactory.

Circulatory failure often occurs during the course of infectious diseases. Vascular crises of this type greatly resemble the condition of surgical shock, in that cardiac insufficiency is seldom present, also the vasomotor apparatus governing the peripheral resistance may be sufficiently active to prevent a lowering of the pressure although the cardiac output is greatly reduced. The immediate cause of a circulatory failure, therefore, appears to be the reduced return of blood to the heart, that is, stagnation of the blood in the veins. Similar pictures are seen in cases of intestinal intoxication and ptomaine poisoning; both are probably the result of splanchnic stasis.

In conclusion I wish to call attention briefly to the value of blood pressure determinations. The sense of security suggested by accepted figures as indicative of normal states is not entirely warranted in the interpretation of blood pressure variations. A standard average normal blood pressure for a given age and sex is entirely desirable, but individuals equally normal, as far as is discernible, may show widely different readings. Hence, a known individual variation is easier of interpretation and becomes of more absolute importance than a comparison of a given reading with a given standard normal.

From a purely physiological point of view a pressure which is found to be higher or lower than the accepted average normal should not, in itself, be considered pathological but rather as the pressure normal to the condition in which it is found. The fact that a given blood pressure reading is high or low, it seems to me, cannot be construed to mean other than that one or more of the factors involved in its production, maintenance and control have become accentuated or depressed. A blood pressure determination, therefore, can only mean the figures obtained by the use of an instrument; the indications of such figures, however, depend directly upon the interpreter's experiences and his understanding of the factors involved in the production of such figures. The usual classification of blood pressure readings as indicative of hypertension, hypotension, or isotonic states is a workable convenience, but if we accept the given standards as correct then all individuals fall into one of these three groups irrespective of the usual or normal condition of the individual case. The extremes of variation in any compiled set of figures undoubtedly represent unusual conditions, also rapid changes from the individual's usual standard are indicative of disturbed functioning. It appears, however, that a thorough search for the cause or causes of such variations, both direct and indirect, should be excited because of blood pressure findings rather than assume that the patient's ailment has unfolded itself through the cuff of a sphygmomanometer. Blood pressure variations are not disease conditions *per se,* but rather symptoms indicative of an altered bodily economy. In many cases blood pressure variations are indicative of compensatory phenomena and therefore should not be interfered with. Hence it appears that the safest interpretation of blood pressure variations will follow as the result of a careful evaluation of the processes involved in the production, maintenance, and control of a balanced circulation.

The author's references to this article will appear in the reprints.

ST. LOUIS UNIVERSITY MEDICAL SCHOOL.

The Effect of the Digestive Period and Other Factors in Reactions After Blood Transfusions

By J. L. BUTSCH, M. D., PH. D.,
Rochester, Minn.,
Section in Surgery, Mayo Clinic,
and
WINIFRED ASHBY, B. S., M. S.,
Rochester, Minn.,
Division of Experimental Bacteriology, The Mayo Foundation.

Now that the therapeutic value of transfusion is established, the usually harmless but often unpleasant reactions which follow the transfusions in a certain percentage of cases are claiming the attention of workers in this field. Great differences in the frequency of reactions to transfusion are reported. For the sodium citrate method alone the incidence of reactions, reported by different men, ranges from seventeen to sixty-three per cent. This lack of uniformity seems to depend in large part at least on differences in reaction criteria and in vigilance in watching for the reactions, as a number of reactions pass off without any serious inconvenience to the patient. Sydenstricker and his coworkers report seventeen reactions in one hundred transfusions. Lewisohn reports chills in twenty per cent. in two hundred transfusions. Pemberton reports reactions in twenty-one per cent. in 1036 transfusions. Drinker and Brittingham, with one half hour posttransfusion observations, report fifty per cent. of reactions and forty-seven per cent. of chills. Meleney, Stearns, Fortuine and Ferry, using a rise to 100° F. as the criterion for reaction, report 63.3 per cent. reactions.

The transfusion reaction resembles the reaction to a foreign protein and its cause is generally assumed to be due to a slight degree of foreignness of the blood introduced, attributable either to slight differences between some or all of the elements of the blood of different persons even within the same group, or to changes in the blood proteins, formed or unformed, brought about by the process of removing the blood from the body. Drinker and Brittingham consider changes in the plates due to incipient coagulation changes an important factor in causing reactions. They obtained a decrease in the number of reactions on removal of the plates, while the washed whole cell content of the blood was uniformly toxic, whether introduced into the person from whom the blood was taken or into another, and a suspension of plates only in saline when injected gave a high percentage of reaction. Several writers, among them Robertson, emphasize the importance of reducing coagulation changes to a minimum by mixing the blood with citrate solution as quickly as possible after it leaves the vein.

Lindeman, who uses the syringe cannula method, believes that his ten per cent. of reactions are due to hemolysis *in vivo*. Meleney, Stearns, Fortuine and Ferry, however, in examining the urine of transfused patients do not find any definite relationship between hemoglobin and urobilin excretion and reactions. The condition of the patient is conceded to have some effect on the incidence of reactions in transfusions. According to Minot, transfusions are more dangerous in patients with high fever, sepsis, or blood diseases than in those with secondary anemia. Hunt reports 23.3 per cent. of reactions in patients with pernicious anemia and only 14.8 per cent. of reactions in other conditions. Meleney and his coworkers, on the other hand, classify the condition of their patients as good, fair, and poor, and report a greater percentage among those in the good condition, which they attribute to the better ability of these patients to react to a foreign substance.

Seven hundred thirty-seven transfusions were studied by us with the object of explaining the reaction to transfusions. We employed the sodium citrate method which has been used routinely in this clinic for several years. This has been described in detail by Pemberton and by Hunt. The technic of observation for reactions has been uniform through 552 cases: The patient was seen by the surgeon after transfusion. His temperature was taken immediately before the transfusion by the operating room nurse and the reading recorded on a special chart kept in the patient's room. There the nurse in charge recorded a temperature reading immediately, and after a half hour, one hour, and two hours; readings were also made a half hour, one hour, two hours, and four hours after the evening meal. The nurse recorded on this special chart the time of occurrence and duration of chills and described in detail any other evidence of reaction which occurred. These records were on the whole very satisfactorily made; if they were not, the case was not included in the series. A rise of two and a half degrees F. above the initial temperature, provided this was not subnormal, was considered a temperature reaction. If the previous daily range of temperature was known, this was taken into consideration. Vomiting and other marked manifestations of reaction were included as chills.

The question of the cause of reactions has been approached from three different angles, the testing of points connected with technic, the factors intrinsic to the patient, and the factors involving both the patient and the donor.

The points considered in connection with technic were, 1, the possibility that a certain amount of hemolysis might take place at the beginning of the bleeding before the citrate solution is diluted to any extent with the blood of the donor; 2, the effect of omitting the saline which had been used previously in the process of transfusion; 3, the effect of insuring the neutrality of all utensils coming in contact with the blood; 4, the elimination of the possibility of reactions from the use of new rubber tubing, and, 5, the effect of the length of time taken to introduce the blood.

It was considered possible that in some cases a small amount of hemolysis of the first few cubic centimetres of blood drawn might take place and that the hemoglobin thus released might be toxic. The blood is introduced into a two per cent. sodium citrate, which is hypotonic; an isotonic sodium citrate solution, according to Rous and Turner, contains 3.8 per cent. of the salt. To test this, one c.c. or two c.c. specimens were withdrawn by means of a long sterile pipette after about fifty c.c. or sixty c.c. of blood had been run into the citrate solution. The specimens were centrifuged until clear and the supernatant fluid was observed for hemolysis. In fifty-five instances in which the tests were made and in which the usual number of transfusion reactions occurred, the blood in one showed some hemolysis, and in two a very slight hemolysis. In the first instance the patient receiving the blood had a reaction, which may have been only a matter of chance, as this patient had three reactions in four transfusions; there was no reaction in either of the other cases.

It is probable that a sterile salt solution will not have a hydrogen ion concentration of 7.4. Saline, in the process of mixing in the circulation, might also be expected to upset the colloidal equilibrium of the blood with which it first comes in contact. The saline which had previously been used to insure an air free column in the tube after the rubber tubing was connected with the injecting needle, and also to wash through the last few cubic centimetres of blood upon completing the transfusion, was omitted as an unnecessary complication. As there was no decrease in the number of reactions after the adoption of this change in technic, it is safe to assume that chills from saline had not been occurring sufficiently often to be of importance. The change in technic, however, as it had no disadvantage and a possible advantage, was maintained. It was found that the water in which utensils were washed and sterilized was distinctly alkaline, and this was considered as a possible cause of reactions. For a period all utensils which came in contact with the blood were washed in neutral water, but as this gave no improvement in the percentage of reaction we concluded that it was not an important factor.

Busman has shown that certain kinds of new rubber tubing cause blood run through them to become toxic. Boiling the tubes in dilute alkali removes this property. Since Busman's report appeared all rubber connections used in transfusions have been subjected to the treatment first recommended by Stokes and Busman. No improvement, however, has taken place in the percentage of reactions. We must conclude that with us new rubber tubing has not been used sufficiently often to be the important factor in our transfusion reactions, and that although the procedure recommended by Busman must be used as a precaution against the reactions which he has shown to be due to the toxicity of new rubber, the cause of most transfusion reactions must be looked for elsewhere.

On the supposition that the transfusion reaction is of the nature of an anaphylactic shock, it was assumed that the patient might be desensitized by a slow injection. As a precaution against the possibility of transfusing a lethal dose of blood of the wrong group, it has always been the practice of surgeons of the Mayo Clinic to transfuse the first one hundred c.c of blood very slowly, often stopping the transfusion for a short time to ascertain the condition of the patient, after which the remainder of the blood is given quickly. This in itself is equivalent to a desensitizing technic and is comparable to that suggested by Besredka to be used in the administration of horse serum. We thought it possible, however, that a more protracted transfusion might be less likely to cause chills and in four instances prolonged the time taken for the blood to run into the vein to thirty minutes. In these four cases there were two severe reactions.

Three points were studied with regard to the condition of the patient, 1, the effect of the patient's initial temperature on the incidence of transfusion reaction; 2, the effect of the hemoglobin percentage, and, 3, the effect of previous transfusion.

In order to learn what effect the initial temperature had upon the percentage of transfusion reactions, 510 patients were grouped according to initial temperatures of 96° to 98° F., 98° to 99° F., 99° to 100° F., 100° to 101° F., 101° to 102° F. The data are as follows:

Temperature	*Cases*	*Reactions Per cent.*
96° to 98° F.	36	43
98° to 99° F.	240	30
99° to 100° F.	172	44
100° to 101° F.	47	40
101° to 102° F.	13	54

As an unexplained increase took place in the percentage reactions these data have also been divided into two partial tabulations:

Temperature	*Cases*	*Reactions Per cent.*	*Cases*	*Reactions Per cent.*
96° to 98° F.	18	33	20	45
98° to 99° F.	170	29	70	41
99° to 100° F.	124	30	48	56
100° to 101° F.	38	36	9	55
101° to 102° F.	10	40	3	100

Although the difference between the percentages obtained for different temperatures is not greater than may occur between averages from groups containing the same number of cases taken promiscuously, their general trend seems to indicate that there is least tendency to reaction when the temperature is normal, and that with an increase in initial temperature there is an increased tendency to reaction.

In 265 cases a consistent tendency was shown for the hemoglobin percentage to have a relation to the percentage incidence of transfusion reactions:

Hemoglobin Per cent.	*Cases*	*Reactions Per cent.*
10 to 20	22	45
20 to 30	59	44
30 to 40	110	35
40 to 50	52	35
50 to 70	22	32

At least as far as the single factor of hemoglobin is an indication of wellbeing, our results do not agree with the findings of Meleney, Stearns, Fortuine and Ferry, who report more reaction from patients in better condition. It will be noted that there is a marked difference between the percentage reactions with hemoglobin above thirty per cent. and hemoglobin below thirty per cent.

The effect of previous transfusion was studied by considering whether an increased or decreased tendency to reaction developed in a series of transfusions, and whether intergroup hemolysins were produced by previous transfusions. We tested patients who had received a series of transfusions to determine if hemolysins had developed which were active toward corpuscles of a like group. We did this because Todd reports isohemolysins following transfusions of cattle which by appropriate absorption treatment show specificity for individuals. These hemolysins were active *in vivo,* but not *in vitro,* unless guineapig complement was present. Of eleven patients receiving from three to seven transfusions in a series, none developed hemolysins against like group corpuscles. This was true whether or not guineapig complement was used.

Eighty-four persons receiving three or more transfusions in a series gave a reaction percentage of forty-two with the first transfusion, thirty-two with the second, and twenty-five with the third. When these series are considered individually, however, and the extent of the rise in temperature is noted, it is found that a consistent increase is shown in some; an equal number show a consistent decrease, and in the others the reactions are apparently arranged promiscuously. This leads us to consider the decrease in tendency to reaction which the summation of the first three reactions of eighty-four persons shows not due to any desensitizing effect of the previous transfusions, but more probably to such factors as hemoglobin and temperature, and possibly blood volume, and means that the condition of most of the patients had improved.

In a consideration both of the patient and the donor, the questions were studied of, 1, whether the patient's serum could have small amounts of agglutinin for the donor's corpuscles, although the donor was of the same group; 2, whether any precipitins could be detected in either the patient's or donor's serum; 3, whether there was a permanent and intrinsic compatibility or incompatibility between a particular donor and patient, and, 4, whether the digestion period of either the donor or the patient had any effect on the incidence of transfusion reactions.

The question of intergroup agglutination may be assumed to have been covered by Landsteiner and Moss when the blood groups were worked out originally. It was also taken up specifically by Lattes, who used the hanging drop method and found that some serums are capable of causing nonspecific agglutination when undiluted, but that when diluted to one half there was no agglutination with corpuscles of a like group. The experience of some of the physicians who performed transfusions at the front led them to suspect that the four groups might not be so clean cut as they have been assumed to be. It seemed worth while to eliminate the very slight possibility of intergroup agglutination. Sixteen drops of the patient's serum were mixed with two drops of the donor's corpuscle suspension in a Wassermann tube. The mixture was incubated for forty minutes, during which time it was shaken at ten minute intervals. This gave ample opportunity for agglutination to take place and also made it possible to eliminate roulleaux formation. After incubation the corpuscles were examined in a counting chamber for clumps, thus avoiding the drying and clumping which takes place around the edges of the hanging drop preparation. One hundred and twenty tests were made, and in none was evidence found of agglutination.

Precipitin tests were made in sixty-one cases by centrifuging citrated blood from the donor and patient until perfectly clear. One c. c. of each serum was mixed in a Wassermann tube, incubated for one hour, and examined the next day. No precipitation was detected.

In order to determine whether there was any intrinsic compatibility or incompatibility between a given patient and donor, the transfusion records of the twenty-six instances in which the same donor was used twice for the same patient were examined. In sixteen instances there was no reaction after either transfusion, in seven instances one transfusion was followed by a reaction and the other was not, and in three instances both transfusions caused reactions. There seems to be no marked compatibility or incompatibility between particular donors and patients.

The study of the effect of the digestion period on reactions we consider, although negative, the most interesting of our results. For several reasons it seemed probable that during digestion changes would take place in the blood of both the donor and the patient which would be conducive to reaction. The assumption is, of course, that protein is entirely reduced to amino acids before leaving the intestinal tract. It is possible, however, to develop some degree of immunity to a vaccine introduced by way of the intestinal tract; and it is true that certain persons have naturally specific antibodies for sheep corpuscles. These facts, although not conclusive evidence, as the antibodies may be given off to the circulation by immunized cells lining the intestinal tract, nevertheless lead us to suspect that sometimes small amounts of protein may enter the blood stream. If such were the case, the blood of donors in which any particular food protein appeared would cause a reaction in patients who were unprotected against the foreign protein. If this were not the case, it seemed possible that there might be in the blood stream certain partially synthesized proteins due to organ synthetic activity following the absorption of the amino acids derived from protein digestion in the intestinal tract, and that if this were so there might be a difference in individuals in the extent to which it occurred which would make the blood of one more foreign to the other at certain periods after eating. It also seemed probable, since it is well known that overeating reduces immunity and that after a meal something is often present in the blood which inhibits the action of the hemolytic antibody in the Wassermann reaction, that eating would cause a depression in the ability of the body to dispose of material in the transfused blood which was foreign to it, and so lead to a reaction.

Transfusions were done about three o'clock in the afternoon. Patients and donors were told to come to transfusions without their luncheon. Some of them did and some of them did not do this, and as a result we have the four possible combinations of food and no food. Careful record was kept of what was eaten and when it was eaten, and the transfusion reaction charts were kept in such a way that reactions could be checked with reference to the meal following the transfusion. The patient and donor were considered to have fasted when no food had been taken for six hours before the transfusion. The results are as follows:

	Cases	*Reactions Per cent.*	*Chills Per cent.*
Both donor and patient had eaten	225	36	27
The donor had eaten, the patient had not eaten	81	32	25
The donor had not eaten, the patient had eaten	64	42	27
Neither the patient nor the donor had eaten	83	35	22
Total number of transfusions in which the reactions were recorded on the special charts	552	37	27

The slight differences between these percentages, judging from the changes they have undergone as the numbers upon which they are based were progressing, are not indicative of any differences in tendency to reaction. We conclude that fasting has no effect on the probability of a reaction.

SUMMARY.

Certain factors connected with the technic of transfusions were studied, and were not found to be factors in the transfusion reactions observed.

Patients with normal temperatures and patients with more nearly normal hemoglobin percentages are less likely to have reactions. An increased tendency to reaction was not found when transfusions were given in series.

In vitro evidence of incompatibility between blood of properly grouped donors and patients was not found; neither did the patients show *in vitro* evidence of incompatibility of blood for their own groups with repeated transfusions.

The incidence of transfusion reactions was not affected by fasting.

The authors wish to acknowledge their indebtedness to Miss Katherine Sylvester for careful performance of much of the technical work presented.

BIBLIOGRAPHY.

Busman, G. J.: Rubber Tubing as a Factor in Reaction to the Blood Transfusion, *Journal of Laboratory and Clinical Medicine*, 1920, v, 693-699.

Drinker, C. K., and Brittingham, H. H.: The Cause of the Reactions Following Transfusion of Citrated Blood, *Archives of Internal Medicine*, 1919, xxiii, 133-149.

HUNT, V. C.: Reaction Following Blood Transfusion by the Sodium Citrate Method, *Texas State Journal of Medicine*, 1918, xiv, 192-195.

LATTES, L.: L'individualité du sang humain et sa demonstration médico-légale, *Archives italian de biologie*, 1915, lxiv, 388-404.

LEWISOHN, R.: Clinical Results in Two Hundred Transfusions of Citrated Blood, *American Journal of the Medical Sciences*, 1919, clvii, 253-271.

LINDEMAN, E.: Reactions Following Blood Transfusion by the Syringe Cannula System, *Journal A. M. A.*, 1916, lxvi, 624-626.

MELENEY, H. E., STEARNS, W. W., FORTUINE, S. T., and FERRY, R. M.: Posttransfusion Reactions: A Review of 280 Transfusions Performed in the Wards of Presbyterian Hospital, New York City, *American Journal of the Medical Sciences*, 1917, cliv, 733-748.

MINOT, G. R.: Methods for Testing Donors for Transfusion of Blood and Consideration of Factors Influencing Agglutination and Hemolysis, *Boston Medical and Surgical Journal*, 1916, clxxiv, 667-674.

PEMBERTON, J. DE J.: Blood Transfusion, *Surgery, Gynecology, and Obstetrics*, 1919, xxviii.

ROBERTSON, O. H.: A Method of Citrated Blood Transfusion, *British Medical Journal*, 1918, i, 477-479.

ROUS, P., and TURNER, J. R.: The Preservation of Living Red Blood Cells in Vitro. I: Methods of Preservation, *Journal of Experimental Medicine*, 1916, xxiii, 219-237.

SYDENSTRICKER, V. P. W., MASON, V. R., and RIVERS, T. M.: Transfusion of Blood by the Citrate Method, *Journal A. M. A.*, 1917, lxviii, 1677-1680.

TODD, C., and WHITE, R. G.: On the Recognition of the Individual by Hemolytic Methods, *Proceedings Royal Society, London*, Series B, 1910, lxxxii, 416-421.

The Value of the Pneumothorax Treatment of Pulmonary Tuberculosis*

By ERNST P. BOAS, M. D.,
New York.

There is nothing more dramatic than to witness the arrest of the progress of a case of advancing tuberculosis brought about by the induction of an artificial pneumothorax. So quick is the relief from suffering, so simple the means employed, so clearly evidenced the relationship between cause and effect, that the physician who has had one successful case almost inevitably becomes an enthusiast, and entertains great hopes that he has found a valuable form of treatment for many of his tuberculous patients. Unfortunately, with a wider use of this therapy, and with a growing experience in its employment, many complicating factors appear to dampen his original ardor. This has been my experience, and, judging from the reports in the literature, it is one which has been shared by most men who have had an extensive experience with artificial pneumothorax therapy. It seems appropriate, therefore, to summarize at this time the results that my colleagues and myself have obtained with this form of therapeutic procedure during the last six years at the Montefiore Hospital.

Artificial pneumothorax treatment, owing to the physiological principles that underlie its rationale, is limited to patients with unilateral lesions, or to those in whom the tuberculous process on the other side is quiescent. This in itself restricts its usefulness, for hardly more than three per cent. of all tuberculous patients fall within this category, if we except very early cases in whom, for other reasons which will be discussed below, this treatment is inadvisable. Even if a case should fall within the above specifications, it is always a moot question whether or not extensive adhesions will permit the introduction of air into the pleural cavity with collapse of the lung. In fact, the great frequency of adhesions forms one of the greatest hindrances to successful treatment. Physical signs and fluoroscopy will not always give assurance whether or not collapse of the lung is possible. We have encountered many cases in which our efforts to enter the pleural cavity were unavailing, although we had expected no difficulty. On the other hand, we have often been successful on occasions when we least expected it. Often repeated attempts are necessary before gas can be admitted to the pleural cavity. These two prime prerequisites alone, a unilateral lesion, and the absence of extensive adhesions, greatly restrict the field for pneumothorax therapy.

So the inquiry narrows itself down to the problem of what may be expected from this treatment in this small selected group of patients. Let us first consider an ideal case with a perfect result, and then study the factors which interfere with such a happy consummation. In such a patient the lung would be completely collapsed and immobile, the cavities compressed and the excess secretion emptied from the bronchi. With this the temperature would speedily drop to normal, the expectoration would greatly diminish, tubercle bacilli would disappear from the sputum, the patient would feel better, and begin to gain in weight. During the following months the clinical improvement would continue, and would be accompanied by a quiescence and healing of the tuberculous process in the diseased lung. In the course of time fibrosis and healing would be complete, and then, when the lung would be allowed to expand, there would remain a lung with a healed advanced tuberculosis with probably a few adhesions to the mediastinum. There is no doubt that this happens at times, but unfortunately it is a rare sequel. I can cite only two patients in my series who ran such a course, and even they are not quite fair examples. The following is the summary of the history of one of them:

CASE I.—S. G., No. 29208, male, aged twenty-three. He had been sick about a year before treatment was instituted, and had an infiltration of almost the whole left lung. The right lung was clear. There were repeated copious hemorrhages.

---

*From the Tuberculosis Service of the Montefiore Home and Hospital.

Soon after one of these which had lasted three weeks the pneumothorax was induced. The patient was afebrile, and his pulse averaged 85. The sputum was positive. Treatment was begun on June 1, 1914, and eleven fillings were given between that date and October 29, 1914. X ray examination showed complete collapse, the pulse and temperature remained normal, there was a decided gain in weight, and the sputum became negative. He was discharged from the hospital an arrested case, and has remained so ever since. He was seen quite recently, and, although he had a thickened pleura and was shortwinded, he continued to do well and was quite active in his business.

The reason why he cannot be called an absolutely fair example of a cure is that at the commencement of the treatment he was afebrile and may have been on the high road to a spontaneous cure. All that can be asserted is that the tendency to pulmonary hemorrhage which he showed has been checked. One other case, who also was quiescent, or almost so, when treatment was commenced, is quite similar. He received his treatments in 1916, and when seen recently was in good health. Although he had often bled before, he has not done so since.

Keeping in mind the natural history of a case reacting favorably to treatment, let us study the mischances that may supervene and hinder a successful issue. Of the first rank in point of frequency is pleural effusion. This occurs in over fifty per cent. of the cases. Accompanying the effusion there is a febrile reaction which may disappear in a week, or may persist for a much longer period. The intrapleural pressure is greatly raised so that further insufflations of gas become impossible. At times this increased pressure causes such respiratory embarrassment that it becomes necessary to withdraw some of the fluid. Such aspiration should, however, be performed only when the indication is urgent, because the effusion acts just as efficiently as air in maintaining the compression of the lung, and because the fluid in most instances will reaccumulate very rapidly. Some authors have suggested removing the exudate and replacing it with air. This procedure is irrational in theory and unwise in practice. The fluid compresses the lung just as well as does the air, and will almost invariably reaccumulate if it is withdrawn and replaced by air. Furthermore, such replacement does not prevent the formation of adhesions, as some have suggested. Nitrogen alone induces fibrosis. Why, it will be asked, if the effusion maintains the lung in a collapsed state, is it an unfavorable complication? In those cases in which it has an unhappy influence on the treatment, the febrile reaction to the effusion is of long duration, and when finally the fluid is sufficiently absorbed that gas may be reinsufflated, adhesions have formed which hinder efficient collapse of the lung, and the treatment becomes ineffectual. In other cases each renewal of the treatment is followed by a fresh effusion.

At times a complicating pleural exudate exerts a beneficent effect on the progress of the case. In such patients the febrile reaction is relatively mild, the effusion is fairly large and persistent. It thus acts very efficiently in maintaining the lung in a compressed state, healing begins to take place in the diseased lung, and by the time that the fluid has become absorbed, the lung is ready to reexpand. This absorption is a very slow process, and is usually accompanied by the formation of extensive adhesions, so that the end result is a dense fibrosis. The following two cases illustrate the unfavorable and favorable effects that a pleural effusion may have on the course of a patient undergoing pneumothorax therapy:

Case II.—M. L., No. 24575, male, aged thirty-seven. The tuberculosis was of about nine years' duration, and had involved practically the whole left lung. At the right apex there was some dullness, but no abnormal auscultatory sign. There were frequent hemoptyses. On January 13, 1913, after several treatments had been given, fluid was found in the chest, and the insufflations had to be discontinued. Six months later treatment was again attempted, but the effusion recurred within a very short time and prevented further use of this method. In the meantime the tuberculosis progressed steadily, and two years later brought about the death of the patient.

Case III.—G. C., female, aged eighteen. The patient had been ill for three months before treatment was begun. There was infiltration of the right upper lobe, with cavity formation. The temperature was elevated, the pulse about 120, the sputum copious, and there were frequent hemoptyses. Seventeen insufflations were given in all. Six weeks after the commencement of the treatment fluid accumulated in the chest. It caused little disturbance at first, and the administration of gas was continued at intervals. Five months after treatment was first started the right chest was almost completely filled with fluid. The febrile reaction to the effusion had not been severe nor of long duration, the temperature had become normal after a few weeks of treatment and had remained so, the pulse rate had dropped to about 100, the sputum, although still containing tubercle bacilli, had become scanty, and the general condition was greatly improved. During the following nine months the patient was left alone. The improvement in her general condition has continued, her weight has risen from ninety-six to a hundred and nineteen pounds, and there has been no fever. In this time the fluid has been gradually absorbed. Today, sixteen months after the first treatment, she is to all appearances a healthy girl, the tuberculous process is arrested, the lung is reexpanded, and there are dense adhesions of the whole pleura. There have been two hemoptyses within the last six months, but these were not very serious, and were not accompanied by fever, and were of short duration.

A purulent pleural effusion is of far graver import. An early death is the usual sequel, so it is fortunate that it is not more frequent as a complication. But it is always to be feared. At any time during the treatment, often when the patient is progressing most favorably and the outlook is apparently most rosy, this dreaded infection may occur. The causes of such a pleural infection are several. A simple effusion may become secondarily infected, either from without during a pleural puncture, which hardly ever occurs when the proper aseptic technic is employed, or from within through the blood stream. Again, an old adhesion, put under tension by the forcible compression of the lung, may tear it and so open an avenue for infection from within. In still other cases a superficial cavity ruptures into the pleura. The last mentioned cause is probably the most common one, and accounts as well for those instances in which the pyopneumothorax develops without the previous existence of a simple effusion. It is really remarkable that such a rupture is not far more frequent. In a lung in which the tuberculous process is allowed to follow its natural course without outside interference, the pathological process invariably reaches the pleural surface at some point. The natural result of this is the formation of a pleural adhesion which grows denser with the progress of the lesion, so that by the time that the superficial tuberculous invasion has reached the stage of caseation and has broken down, a thick wall of connective tissue has walled it off from the pleural cavity. A successful pneumothorax wantonly defeats this wise provision, for with complete collapse of the lung the pleural sheaths are widely separated, so that the superficial lesion ulcerates directly into the open pleural cavity, and the infective material, usually loaded with saprophitic and pyogenic organisms, as well as with tubercle bacilli, is freely scattered throughout the pleural space.

Be the cause what it may, the sequel can usually be written in a few words. A septic temperature makes its appearance, the patient becomes severely ill, and without respite proceeds on a downward course which sooner or later terminates with death. Treatment offers little hope. A thoracotomy with permanent drainage has little effect on the progress of the condition. It makes the patient uncomfortable from the dressings soaked with pus, for they are very hard to keep clean. Carrel-Dakin treatment, such as is employed in ordinary empyemas, should be attempted. I have had no experience with it in these cases. It seems probable that the frequent presence of a bronchial fistula, which would allow the fluid to gain access to the bronchi and so give rise to a very irritating cough, might limit the usefulness of this method. Unfortunately, the bronchial fistula is rarely of sufficient size to allow adequate drainage of the pus through the lung, even when assisted by postural treatment. The most hopeful form of therapy is repeated Potain aspiration of the pus. Very rarely this allows the pyopneumothorax to clear up. Not infrequently the needle punctures become infected from the pleural pus, and an external fistula is formed. The following case illustrates the usual course of a pyopneumothorax complicating an artificial pneumothorax.

Case IV.—A. P., No. 39595, female, aged thirteen. The patient, a girl very well developed and mature for her age, was taken acutely ill with a tuberculous bronchopneumonia of the whole left lung. The right lung was uninvolved. Eight weeks after the onset of the illness she was admitted to the hospital and pneumothorax treatment was at once instituted. The result was brilliant. The temperature, which had been ranging from 104° to 105° for over two months, dropped, the sputum diminished in amount, the general condition of the patient underwent a remarkable improvement. The progress to recovery was continuous in spite of the fact that a small amount of fluid collected in the pleural cavity a month after the beginning of the treatment. Within three months the temperature was absolutely flat and never showed any elevation until the onset of the terminal complication. At the end of eleven months of continuous treatment the girl had gained thirty pounds in weight and looked every way in perfect health. Then quite abruptly the temperature rose to 105°, cough became severe and productive of much foul pus. Aspiration of the chest revealed a pyopneumothorax. From that time on her downward progress was rapid; she acquired a pasty septic look, lost weight steadily, and finally died after two months from a terminal tuberculous meningitis. Repeated chest aspirations were of no influence on the course of the disease.

Quite rarely recovery ensues in spite of the pyopneumothorax. Three of our patients with this complication recovered. One of them had had pneumothorax treatment for nine months with good results, when there was a return of fever and pus was found in the chest. After one Potain aspiration the temperature dropped to normal, and remained so, his general condition showed a marked improvement, he continued to gain in weight, and was finally discharged with a negative sputum. Another one left the hospital with a pyothorax and engaged in business very successfully for two years, when fever, emaciation and cough returned. A thoracotomy was performed and the wound closed in three months. He then felt well for two years. At this writing he has again reported to Dr. Fishberg with fever and debility and an empyema necessitatis for which he has again been operated upon. A summary of the third case of this type follows:

Case V.—H. L., No. 27922, male, aged thirty-two. The patient had an infiltration of the whole right lung, with dullness but no change in breath sounds in the left supraclavicular fossa. He received two insufflations of air at Bellevue Hospital, apparently for hemoptysis. He was then transferred to our country sanatorium at Bedford Hills, where treatments were continued. After several months of treatment an empyema necessitatis developed. He was then transferred to the Montefiore Hospital, where repeated chest aspirations were performed. The pyopneumothorax eventually cleared up, the temperature became normal, tubercle bacilli disappeared from the sputum, and he was discharged from the hospital greatly improved.

Adhesions which prevent complete collapse of the lung are a frequent cause of unsuccessful pneumothorax treatment. Usually the most advanced lesion is surrounded by the densest adhesions, so that there is no collapse in the situation where it is most needed. It is really astonishing that this factor is not a greater hindrance. As a matter of fact, many patients in whom the fluoroscope shows incomplete collapse do remarkably well under this form of therapy. Probably in such instances the portion of the lung which does not collapse is nothing but a fibrous shell from which there is very little absorption, so that it exerts no influence on the general condition of the patient. In most subjects in whom pleural senechiæ prevent proper compression of the lung, the treatments exert no appreciable effect on the progress of the disease, and must be discontinued.

Another complication which needs little comment is renewed activity on the presumably healthy side. No matter how carefully the cases are chosen, such a recrudescence is of frequent occurrence. The term renewed activity is used with intention, for in every such case there is a latent lesion on the untreated side. It is probably the increased compensatory expansion of this lung which upsets the balance and arouses the dormant process. In such a case the pneumothorax treatments must be suspended. At times, as a last resort, a pneumothorax is induced in individuals who have bilateral lesions. Here it is difficult to determine which lung should be collapsed. Usually the side presenting the most extensive lesion is chosen. This, however, is not an absolute criterion, for the course of such a case may show that the actually quiescent side has been treated while the lesion on the other side, although much smaller in extent, is the active one. Careful study of the patient may prevent this error in some instances, but in most it is unavoidable.

Fortunately I can report only one case of rupture of the lung with a subsequent acute suffocative pneumothorax. The case report will give an adequate account of this most distressing complication.

Case VI.—B. U., No. 39342, female, aged eighteen. The patient had been ill for two years, and at the time when treatment was instituted had excavation and infiltration of the whole left lung, as well as infiltration of the upper lobe of the right lung. She had been doing poorly for some time, and as a last resort it was decided to attempt pneumothorax therapy. The pleura was entered with ease, and without untoward symptoms at the first puncture, and 325 c. c. of air were given. Immediately afterward the girl complained of a sense of intense suffocative fullness of the left chest, and became very dyspneic. Six hours later she had a cyanotic pallor of the face, and her hands and feet were cold, the pulse was poor, dyspnea severe, and there was much pain in the chest. In three more hours she was semicomatose, and all the signs of severe shock persisted. There was little change the following day, although the pulse was a little stronger. On the second day after the insufflation a needle was inserted in the chest and a large amount of air was allowed to escape slowly. There was an immediate improvement, the dyspnea became less urgent, the pulse became stronger, the color assumed a more natural hue, and the patient became a good deal brighter. The following day the distressing symptoms returned, and death from pulmonary edema speedily followed.

In this case either the needle tore a valvelike flap in the lung which allowed air to enter the pleura from the bronchi with each inspiration but prevented its discharge on expiration, or else the compression of the lung tore an adhesion with the same ultimate effect. The pleura rapidly became overdistended with air under great pressure, the force of which exerted on the other lung, the heart and other mediastinal organs resulted in the symptoms which brought about her death.

These are the important complications which may interfere with the success of pneumothorax therapy. Many times they are delayed in their appearance so that the patient derives a temporary benefit from the treatment, and at times this passing alleviation of symptoms may be worth the trial. Success in tuberculosis therapy must be judged from two viewpoints: the relief of symptoms with prolongation of life, and cure. The relief that may be obtained from the insufflation of air may be of short duration, or may extend over a number of years. Thus two of our patients were discharged from the hospital greatly improved after treatment, but died one and two years later respectively, after a new flareup of their tuberculosis. Another patient was sent home after a year's treatment and worked for the following two years in apparent good health. She was readmitted to the hospital six months ago with active bilateral lesions. She is still alive, but the prognosis is poor. Another girl who was treated in 1915 with unsatisfactory results died two years later with a pyothorax, and still another patient, two years after a course of treatments which were interrupted by the appearance of a pleural effusion, died from a tuberculous nephritis and a spontaneous pneumothorax on the same side on which he had received the insufflation of gas.

Death from air embolism is frequently mentioned as one of the dangers of pneumothorax therapy. I have never seen a case, and am under the impression that if sufficient care is taken to instill no air until the manometer shows clearly that the needle is in the pleural space, it will not occur. Subcutaneous emphysema is observed rather frequently, but at most it is an annoying, never a dangerous, complication.

CONCLUSIONS.

In recapitulation, let us review the facts that have been presented and endeavor to form an estimate of the benefits that we may reasonably hope will accrue to a patient who is subjected to pneumothorax therapy. We will confess frankly that a positive cure is only rarely accomplished. In the majority of successful treatments there is distinct temporary relief, the ravages of the disease are checked for a while, the temperature drops, the cough lessens, the patient gains weight, and is a good deal happier and more comfortable. After a varying interval of improvement there arises some disastrous complication which puts a stop to further progress, and the disease pursues its former course. But in the meantime there has been gained a period of comfort for the patient, and possibly a prolongation of his life. Again, the treatment may induce a longer arrest of the activity of the tuberculous process and give the subject a year or two of comparative comfort. These gains, small as they may seem when compared to the ideal of saving life, are not to be scorned, and where we succeed in attaining them we may justly consider the treatment a valuable therapeutic agent. But we must never deceive ourselves as to the probable final outcome, and allow our early triumphs to make us overenthusiastic. Above all, keeping in mind the great frequency of complications, we must never employ this mode of therapy in early cases, for in them complications are no less common. Theoretically, they should occur with greater frequency, for the earlier the case the fewer the adhesions, and the greater the chance for a dissemination of the tuberculous process throughout the whole pleura by rupture of a subpleural lesion into the pleural space. Spontaneous arrest occurs so often in early cases of tuberculosis that it is no less than criminal to subject such a patient to the risks which the pneumothorax treatment necessarily entails. A severe intractable hemorrhage would supply the only exception to this rule.

The place which pneumothorax treatment should occupy in the treatment of tuberculosis is analogous to that which radium occupies in the treatment of cancer. Just as the use of radium is properly reserved for hopeless, inoperable malignant tumors, so should pneumothorax therapy be restricted to such victims of tuberculosis for whom no other treatment offers any hope. Just as with radium we often obtain great symptomatic relief and prolongation of life, and very rarely a cure, so with pneumothorax we render our patients comfortable, and mayhap add a few years to the short span of their existence. It may be argued that our outlook is unnecessarily pessimistic because we have treated only hopeless cases. The records of other workers in this field, who have not restricted the type of cases treated as we have, will bear us out. It is the fate of all methods of treatment, particularly of such spectacular ones, to be lauded with uncritical praise by enthusiasts. It is only after they have run the gamut of many hands that their proper place in scientific therapy becomes established.

All that has been said about the pneumothorax treatment of phthisis applies with even greater force to its use in cases of lung abscess. The danger of complications is even greater here, and after employing it a number of times we have hesitated to use it in any recent cases.

SUMMARY.

In summary it may be said that treatment by artificial pneumothorax is a valuable adjuvant in the handling of selected cases of advanced pulmonary tuberculosis in whom other measures have been of no avail. It frequently gives temporary symptomatic relief, and very rarely brings about a cure. In lung abscess its dangers outweigh its possible good effects.

MONTEFIORE HOME AND HOSPITAL.

Induced Pneumothorax in the Treatment of Pulmonary Tuberculosis*

By B. STIVELMAN, M. D.,
Bedford Hills, N. Y.,

Medical Superintendent, Montefiore Home Country Sanatorium,
Bedford Hills, N. Y.

The eager search of a specific in the treatment of tuberculosis since the discovery of the tubercle bacillus has so far been almost pathetic in its failures. None of the suggested tuberculins, vaccines, sera, foreign proteins, heliotherapies and electrotherapies, drugs and chemicals whose number is legion, have withstood the test of time. The value of the respective remedies is often exquisitely colored by the individual experience of their proponents but are at best indefinite, if not harmful. Tuberculin in particular, for many years considered a specific in the treatment of pulmonary tuberculosis, has fallen into disrepute and has been abandoned by the most careful phthisiologists. If for no other reason, the proposed methods of treatment are of doubtful value because of the fact that they are nearly always stated to exercise their alleged curative effects only during the very early stage of the disease when the diagnosis is not always definite and spontaneous cure not infrequent. It is difficult to recall that a reliable remedy for the cure of far advanced tuberculosis has ever been offered.

When the extravagant claims for the various therapeutic agents are impartially discounted, it is quite apparent that the most efficient means of combating phthisis that we now possess is the socalled rest cure. Nature has shown us the way in the employment of rest in the treatment of the sick. Most organisms are either constrained or inclined to repose when stricken with disease and indeed our modern therapeutic armamentarium for disease in general and tuberculosis in particular contains no better means than absolute rest. It is needless at this time to expatiate on the curative value of the general rest cure of tuberculosis. This is the accepted therapy, and those who are not yet convinced have themselves to blame. Let us confine ourselves to that part of the rest cure which pertains to the immobilization of the diseased lung by means of induced pneumothorax.

As far back as 1822, James Carson, an English physiologist, suggested the feasibility of artificially inducing pneumothorax and endeavored to substantiate his claim by animal experimentation. James Haughton and William Stokes in 1837, and Walter Hale Walshe in 1860, recorded their observation of the marked improvement in the general condition of hopeless cases which sometimes follows a spontaneous pneumothorax, but none of these observers thought that "this warranted the fanciful proposal to treat phthisis by producing artificial pneumothorax." Potain, in 1884, was probably the first to describe a case of its employment, when he substituted sterile air for the fluid which he aspirated from a patient afflicted with hydropneumothorax. Forlanini, in 1894, and independently, Murphy, in 1898, were the first to induce primary pneumothorax solely for therapeutic purposes. But for some time little attention was paid to their reports, until Brauer, Spengler and Saugman took up this work on a large scale in Europe. At present there is not an institution of note whereat this method of treatment is not pursued.

---

*Read before the East New York Medical Society, Brooklyn, N. Y., February 23, 1921.

It has been pointed out that the reason why lesions in the lung heal but slowly is because the constant distention of this organ renders coaptation of the diseased parts impossible. If we add to this some thirty thousand contractions and expansions per day, due to respiratory effort, we begin to wonder how healing ever does take place.

The aim of the treatment is to collapse the diseased lung by the introduction into the pleural cavity of a sterile innocuous gas. When collapse of the lung is obtained, we accomplish the following:

1. The diseased or more diseased lung is put at perfect rest, just as a tuberculous joint is put at rest by the application of a suitable splint.

2. Coaptation of the diseased surfaces is made possible and healing promoted.

3. Inflammatory material is expelled from the alveoli and caseous and necrotic material is expressed from the cavities which are present more often than we can find them.

4. The blood supply of the lung is much diminished and the absorption of toxins proportionately reduced.

5. Further extension of the disease is arrested and the passive hyperemia is produced which helps the development of fibrous tissue.

6. The lymph spaces are compressed and a further reduction in the absorption of toxic material is procured.

7. There is reason to believe that the mere separation of the visceral from the parietal pleura, made possible by the interposition of an inert gas, is in itself of some value in diminishing toxic absorption.

8. The compression of the bloodvessels prevents the occurrence of hemoptysis.

It is inexpedient to go into the description of the apparatus for and the technic of the induction of pneumothorax. Suffice it to say that the most important advance in this therapy was made in 1907 when Saugman suggested the use of the water manometer. This instrument is rightly called the heart of the apparatus and without it the inflation of the pleural cavity would not only be often impossible, but also very dangerous. The operation is not unlike an ordinary thoracocentesis. The gas enters through the anesthesizing needle after the manometric oscillations indicate a free pleural space.

There was a time when nitrogen gas was used exclusively because it was thought that oxygen was rapidly absorbed from the pleural cavity. It was proved, however (1), that within a few hours after the inflation with nitrogen, the gas aspirated from the pleural cavity, due to the rapid diffusion of gases, contains a large proportion of oxygen (2). It is also pertinent to interpolate that many nitrogen tanks, like so many oxygen tanks, seem to contain a mixture of gases strikingly similar to atmospheric air. We therefore give filtered atmospheric air the preference in our practice.

The selection of the point of injection deserves serious consideration. On it often depends the success or failure of the operation. We must keep away from pleural adhesions in order to induce pneumothorax. We also choose our point of injection as far away as possible from the main lesion so as to avoid puncturing a pusfilled cavity. Experience teaches that both physical findings and röntgenography often fail to disclose the location of adhesions. Conversely we have succeeded in numerous instances where the x ray showed the presence of extensive adhesions. A resonant spot with good breath sounds is a safe place to go into. It appears, however, that the most reliable means of ascertaining whether or not the pleural cavity is free at a certain point is to do an exploratory puncture with the needle connected to the manometer. When the manometer records a negative pressure of three to six centimetres of water on inspiration and a reduction of this negative pressure to minus two minus five on expiration, with free oscillations, the pleural cavity at the point of puncture is free from adhesions and inflation may be started. The heart must be avoided in cases with cardiac displacement and when the diaphragm is markedly retracted, the possibility of puncturing an abdominal viscus must be kept in mind.

COMPLICATIONS.

Not all cases of induced pneumothorax run a smooth course. Some complications may arise during the act of inflation, or difficulties may be encountered months after the initial inflation. Of the former, the most distressing both to patient and physician is pleural shock. This complication is characterized by a sudden sharp pain in the region of the precordium, just as the needle passes the pleura. Dyspnea and cyanosis, feeble and irregular pulse soon make their appearance and are followed by tonic and clonic contractions of the skeletal muscles. Amblyopia is often complained of and loss of consciousness soon ensues. We are still in the dark as to the etiology of pleural shock. Some state that it is caused by the injection of air which is below body temperature (3), but as a matter of fact pleural shock is observed before the inflation is begun. Others assert that blunt instruments may cause it. Clinically, however, the complication appears when sharp instruments are used. Reviere states that in animals mechanical irritation will not cause pleural shock whereas chemical irritants will. Other observers hold the opposite view. Pleural shock, as has been shown elsewhere (4), is probably due to vagus irritation and is the most frequent complication during inflation of the pleural cavity.

Air embolism is another source of danger, but not quite of so frequent occurrence as some authors would have us believe. Conclusive proof is still wanting that at least in one case air embolism had really occurred in therapeutic pneumothorax. Experimentally, five c. c. of air were introduced into the carotid artery of dogs and ten c. c. into their left ventricles without ill effects on the animal. The symptoms of air embolism are strikingly similar to those of pleural shock, and while it is reasonable to suppose that air embolism might occur, it is quite possible that pleural shock may have been the cause of distress in many cases presenting symptoms of socalled embolism.

Spontaneous pneumothorax, due to the laceration of the visceral pleura or puncture of a superficial cavity, may sometimes occur and is easily diagnosticated. This complication is distressful but not very dangerous as a rule, for the reason that in lesions immediately underlying the visceral pleura, nature has usually provided extensive adhesions to prevent the spread of the disease process which, at the same time, bind the pleura securely to the chest wall. When under these circumstances a spontaneous pneumothorax occurs, complete collapse on account of these adhesions is most often rendered impossible and the patient is saved the distress which otherwise would have been severe.

Cutaneous emphysema, due to a leakage of the gas through the needle tract into the subcutaneous tissue, occurs at times when the intrapleural pressure is too high. It occurs less frequently since small calibre needles are used in the inflation. It is not dangerous ordinarily and disappears in a few days. Puncture of the heart or an abdominal viscus has happened and cocain poisoning is not unknown.

Pleural effusion in the course of artificial pneumothorax is present in over seventy-five per cent. of all cases if carefully looked for. It is most frequent in the first six months of the treatment, but may occur as late as four years after the initial operation. It is not as serious as it was once thought to be. After the initial fever, chill and pain in the chest, the fluid in many cases seems to be rather a salutary phenomenon and often detoxicates the patient. If it accumulates too rapidly, it is aspirated and replaced by a similar amount of sterile air. And when an optimum intrapleural pressure is maintained the pneumothorax treatment can be carried on for an indefinite period. In our experience, adhesions do not form as rapidly in the presence of clear fluid as we once thought they did, provided we judiciously substitute air for the fluid and leave off with an increasingly positive intrapleural pressure.

Pyopneumothorax will occur in inverse proportion to the rigidity of asepsis observed. Some pyopneumothoracies, however, are due to the rupture of adhesions and cannot be prevented. It is a serious complication but replacement of the pus by sterile air will delay the fatal issue for months and even many years.

The most discouraging complication is the extension and activation of the disease in the untreated lung. When this occurs, the pneumothorax must be abandoned, much to the chagrin of all those concerned.

INDICATIONS.

Not unlike the general treatment of tuberculosis, pneumothorax is indicated in clinically active tuberculous disease only. Anatomical tuberculosis, *per se*, needs no treatment. It is simply a historic landmark perpetuating an old invasion of the tubercle bacillus. When clinical activity is present, the advisability of inducing pneumothorax should always be kept in mind. The consensus of opinion of those who are best qualified to give an opinion on the subject is that we wait too long before this method is given a trial and thus waste many excellent opportunities. Mild, incipient tuberculosis should not be subjected to pneumothorax on account of its potential complications. In miliary tuberculosis, both lungs are equally involved and pneumothorax is not feasible. It is in the acute, progressive phthisis that pneumothorax finds its best indication and offers the most astonishing therapeutic results. After a few inflations in these cases, the fever, night sweats and tachycardia abate, cough and expectoration is decreased and the patient rapidly gains weight and strength and very often an arrest of the disease is obtained. All moderately advanced unilateral lesions that do not respond to the orthodox method of treatment are suitable for the collapse therapy. It bespeaks a lack of familiarity with the potential value of pneumothorax to wait too long in cases who have not improved after four to six months of absolute rest. Fibroid phthisis is not a contraindication and we have obtained many excellent results in such cases. A bilateral lesion, *per se*, does not constitute a contraindication. Experience teaches that in most advanced tuberculosis the lesion is bilateral but that in one lung the lesion is comparatively inactive, and it has been proven clinically that when a pneumothorax is induced and judiciously maintained on the more active side, the untreated lung is favorably affected and râles will often disappear and the patient's general condition will take a decided turn for the better.

The most spectacular results are obtained with artificial pneumothorax in cases of severe, uncontrollable hemoptysis. Here it is our intention not only to collapse the lung, but to forcibly compress it as rapidly as possible in order to plug the bleeding vessels. Larger quantities of gas are used and refills are given more often. The results are astonishing. Moribund cases have had their prognosis completely changed with two inflations. Many of the cases of pneumothorax which have been discharged from our sanatorium with their disease arrested belong to this class.

Some authors argue that all far advanced cases should be given the opportunity to benefit by artificial pneumothorax. We share this opinion in all such cases wherein we feel that the untreated lung will be able to maintain satisfactory respiratory function despite the fact that it is the seat of a moderately advanced lesion.

CONTRAINDICATIONS.

Some have already been mentioned. Textbooks on the subject frequently state that extensive pleuritic adhesions constitute definite contraindications. This, as we have shown, is erroneous. We must repeat our efforts. They do no harm. When we attempt and fail, it is no fault of ours. If we fail to attempt, the interests of the patients are not well served. Adhesions may preclude the induction of pneumothorax, but they are not a contraindication. Advanced laryngeal and gastrointestinal tuberculosis are absolute contraindications. The same is true of severe diabetes, although mild cases with a fair carbohydrate tolerance are often benefited. Advanced disease of the kidneys and decompensated cardiac conditions render this mode of treatment impracticable. Pregnancy is not a contraindication, and while the best results are obtained in patients less than fifty years of age, it should be tried in older patients when indicated.

RESULTS OF THE TREATMENT.

The percentage of cases suitable for pneumothorax had been variously estimated from five to twenty per cent. This extreme variation is due to the fact that the studies were not made from comparable material. Those who treat the very early tuberculous report a greater percentage of suitable cases. On the other hand, those who are in charge of hospitals for the far advanced tuberculous, see but few suitable cases. For a similar reason, reliable statistics on the results of this therapy are not available. Those who treat incipient and strictly unilateral cases are able to show a larger percentage of excellent results than those who apply this treatment in the advanced and hopeless cases.

At our sanatorium an excellent opportunity presented itself to study the value of pneumothorax in all forms and stages of phthisis in which it is indicated. More than half of our cases were observed for a long period of time and were hopelessly progressive. Others were suffering from uncontrollable hemoptysis. In these two groups pneumothorax was induced as a last resort. On the other hand, many of our cases were moderately advanced and although the better lung was not much involved, they ran an active and progressive course, and pneumothorax was induced as a matter of choice.

Of the last sixty-five cases so treated, thirty-eight suffered from far advanced bilateral lesions, who ran an active, progressive course, and whose chances for recovery under the ordinary sanatorium care were very poor. Of these, four, or 10.4 per cent., were discharged with disease in arrested condition. Eighteen, or forty-seven per cent., made remarkable improvement, their constitutional symptoms abated, cough and expectoration markedly decreased and many were able to go home and resume their duties as bread winners. Three of these cases received pneumothorax on account of uncontrollable, severe, recurrent hemoptysis. The remaining sixteen, or 42.6 per cent., did not profit by this treatment. In eight of these the lesion in the other side was activated, three developed pyopneumothorax, in four the preexisting tuberculous laryngitis assumed dangerous proportion and one died of meningitis.

In this group there were also three cases in whom the induction of pneumothorax could not be effected on account of obliteration of the pleura. Two of these have since died and one is progressive.

Pneumothorax was also induced in twenty-seven moderately advanced cases who ran an active and progressive course, and although in these the better lung was only slightly involved, their prognosis was not at all favorable. Fourteen, or fifty-two per cent., of these were discharged with disease arrested, the condition of nine, or thirty-three per cent., improved so markedly that they were able to leave the institution and do at least part of the work they had done before their illness. In four cases, or fifteen per cent., the pneumothorax was of no benefit because of the progress of the disease on the untreated side. In this group, there were three cases in whom pneumothorax was induced on account of severe, uncontrollable hemoptysis.

In this group there were also four cases in whom inflation of the pleura was technically impossible. Three of these are progressive and one is holding his own.

Analysis of these figures shows that twenty-eight per cent. of all hopeless cases were discharged with disease arrested, forty-two per cent. with condition markedly improved, and thirty per cent. did not profit by this treatment, while in a similar group of patients in whom pneumothorax could not be induced on account of technical difficulties, eighty-five per cent. have either died or are progressing rapidly to a fatal termination.

In view of the results obtainable with artificial pneumothorax in a class of patients whose prognosis is hopeless otherwise, it is obvious that this method of treatment represents the most remarkable advance in the treatment of tuberculosis in modern times. No excuses are to be offered for its induction in suitable cases. On the contrary, many should be asked to explain their failure to resort to this treatment when all measures fail. There are many who attempt to discredit this method of treatment although they had absolutely no experience with it. Others presumably on account of their inability to choose the proper case and to judiciously maintain a satisfactory pneumothorax openly oppose it. They may be classed among those of whom Woodcock (5) says, "To another kind of censor I confess an antipathy—the ultraclever critic who in the very order of things meets with a limited executive success in his own attempts and is temperamentally obliged to use his ability of expression to excuse his own failures and belittle the work of the more fortunate." The consensus of opinion of most dependable observers is in accord with that of Rist (6) who says, "Collapse therapy is evidently the best and in the present state of things the only effective treatment we can oppose to progressive phthisis." Pneumothorax, it is true, is not a panacea, but it gives many clinical cures and over fifty per cent. of remarkable clinical improvement in cases otherwise doomed to die.

REFERENCES.

1. WEBB, GILBERT JAMES, and HAVEN: *Archives of Internal Medicine,* 1914, xiv, 883.
2. TOBIESEN: *Brauer's Beitrage,* 1911, xxi, 109.
3. SIMON: Artificial Pneumothorax Treatment of Pulmonary Tuberculosis, NEW YORK MEDICAL JOURNAL, April 21, 1917.
4. STIVELMAN, B.: The Dangers in Artificial Pneumothorax, NEW YORK MEDICAL JOURNAL, cix, 187.
5. WOODCOCK, H. DE CARLE: *Edinburgh Medical Journal,* November, 1915.
6. RIST, E.: *Quarterly Journal of Medicine,* 1913, vi, 259.

Measures for the Control of Tuberculosis in Cattle*

By C. J. MARSHALL,
Philadelphia,
Professor of Veterinary Medicine, University of Pennsylvania.

On January 1, 1919, there were supposed to be 979,000 dairy cattle in Pennsylvania. They were distributed among about 200,000 herd owners. Judging from the best information at hand tuberculosis is present in sixty per cent. of the herds and ten per cent. of the animals.

Pennsylvania began an active campaign to control tuberculosis in cattle in 1896. The work has been continued since that time as rapidly as funds, authority and assistance would permit. During the period of twenty-three years from 1896 to 1919, 272,895 head of cattle were tested with tuberculin under state supervision. Of this number 32,392 head failed to pass the test. For the purpose of detecting tuberculosis in a herd, tuberculin is of the greatest importance. It was first used by Professor Gutmann, of Dorpat, Russia, in January, 1891. Leonard Pearson was first to use it in America; he applied the test to seventy-nine head of Jersey cattle belonging to Mr. Joseph Gillingham, of Villa Nova, Pa., on March 16, 1892; fifty-one animals failed to pass the test; they were slaughtered and the disease was found in every case. Previous to the tuberculin test Dr. Pearson made a careful physical examination of each animal in the herd and removed six that he considered affected with the disease; each one of the six animals showed well marked lesions on postmortem. Judging from this experience and the history of the herd, it was suspected that many more of them had the disease. Of the fifty-one animals that failed to pass the test it was not possible then, nor would it be possible now, to have detected the disease by a physical examination.

Tuberculin testing met with considerable opposition at first. Among the objections raised it was thought that it would produce the disease in noninfected animals; that it would make them more susceptible to infection; that it would cause abortion or be a fruitful means of spreading infectious abortion in a herd; that many animals would react when they were free from this disease and that it would not even pick out all the infected animals in a herd. Practically all of these objections have proved to be incorrect. Tuberculin is not infallible. It is considered accurate to about ninety-five per cent. Its greatest degree of accuracy will be found on animals that have not been previously tested. It is not unusual for a dangerous spreader of the disease to pass a satisfactory tuberculin test. For a number of years subcutaneous tests only were used; when retests were necessary the dose was doubled and in some cases quadrupled; it was not possible to increase the dose sufficiently to detect all infected animals. Later the intradermal and ophthalmic tests were introduced and have proved most helpful. In heavily infected herds a combination of two or all three of these tests is often used with excellent results. Certain tuberculous animals may react to an ophthalmic tests and at the same time pass a satisfactory intradermal or subcutaneous test; they may react to all three tests, two or only one of them; it is possible that an exceptional case may fail to react to any one of the combination. It is believed, however, that with a proper application of the three tests it is very exceptional for an affected animal to escape or a nontuberculous animal to be condemned. The subcutaneous test is still considered the most reliable of the three. The ophthalmic test is perhaps the least reliable for the reason that the reaction is flighty and lasts but a short time. The reaction to the intradermal test remains for a period of three or four days; hot weather and febrile diseases do not interfere with it. The intradermal test is recognized and accepted by a number of states. Pennsylvania has not yet decided to accept it on cattle for interstate shipments and recommends its use only in combination testing. A wellmarked reaction to any of the three tests is considered reliable evidence that the animal is affected with tuberculosis. Slight reactions to any of these tests are difficult to interpret, for there is no well defined method for judging them; it requires much training and careful judgment to decide each individual case.

The state has never attempted to force herd owners to submit their animals to a tuberculin test. Certain local boards of health have been rather insistent at times that the state should help them force a test on all animals producing milk for the community. The state has never been able or willing to do so. The best progress has been made in cooperation with the owners. Practically all testing has been done at the request of the owner after he had been fully informed of most of the disagreeable conditions that were likely to arise. There has scarcely been a time in twenty years when there were not many more applications for testing than the state was able to handle. With this same spirit of cooperation a few local boards of health have been able to get milk from tuberculin tested cattle. This manner of handling tuberculosis is known as the Pennsylvania Plan. It was started in Pennsylvania in 1896 by Leonard Pearson. It was adopted in many states and finally by the Federal Government. It was in operation from 1896 to 1918 when it was broadened to make room for Federal assistance. There are still about three hundred herds operating under the old plan; no new herds are taken on under the old plan, but they can be handled under what is known as the Federal State Accredited Plan.

Under this plan the owner signs an agreement with the Federal and state governments whereby he agrees to submit each animal in his herd to a physical examination and tuberculin test; that he will remove from the herd and dispose of all reacting or physically affected tuberculous cattle; that he will submit the entire herd to such inspection at intervals of not more than a year; that he will make no new additions to the herd except with official consent; that he will clean and disinfect his premises under official supervision, correct insanitary conditions and observe the precautions and measures recommended by the government. Thirteen hundred herd owners have signed such an agreement; their herds have been tested, in some cases more than once; there are 22,000 head of cattle in these herds; eight per cent. of the number failed to pass the test. No lesions were found in eleven per cent. of those that were condemned and slaughtered; all were killed under Federal or state supervision; the carcasses were inspected not for the purpose of proving the accuracy of the test but to determine whether the meat could be used for human food; it is probable that a more searching inspection would have revealed lesions in many of those in which none were found. There are over five hundred herd owners who have signed a similar agreement and are anxiously waiting for a test. The test is made free of expense to the owner. It can be made only by a regular trained agent of the federal or state government.

---

*Read before the Philadelphia County Medical Society, December 8, 1920.

Animals that react to the test are slaughtered under state or federal supervision; the owner is entitled to all receipts from the hide, carcass and offal. In addition to this there is an indemnity provided by law from the federal and state governments. The federal indemnity is limited to fifty dollars for a registered animal and to twenty-five dollars for one not registered. The state limits are fixed at seventy dollars and forty dollars. The state is handicapped at present by having exhausted the funds provided for indemnity by the last legislature. The federal government has money available but cannot pay such claims until the state can do so. The work is being continued the same as when money for indemnity was available; those that fail to pass the test are appraised at their fair market value at the time of slaughter; the owner is made no promises and given no encouragement that the claim will ever be paid, yet there is a mutual understanding that it will be presented to the incoming legislature for consideration. Up to the present time the legislature has never failed to provide money to pay similar claims. The state has spent considerable money in paying indemnity for cattle that have been destroyed. It has not been paid with the view of remunerating the owner entirely for his losses. In many cases the losses have been far in excess of what the owner was able to receive from all sources. The indemnity has been of great assistance in herds that were badly affected. The state has considered that the money was spent for the purpose of educating the public and protecting their health and that of their livestock. Many able financiers consider it a mistake to pay indemnity for animals affected with any disease. It is probable that the amount of indemnity will be reduced rather than increased in the future, and that it will not be many years before indemnity will be cut out entirely.

It might appear that very little has been accomplished toward eliminating tuberculosis from our dairy cattle. The total number of animals examined and tested in the past twenty-five years is barely more than a fourth of the number of dairy cows now in the state. Each animal should be examined and tested at least once each year if the disease is to be controlled. It is physically and financially impracticable at present to undertake this task on so large a scale. According to the best authority of the present day it is stated that ten per cent. of the tuberculosis in the human family can be traced to bovine origin. If this is true the matter should be of vast importance to physicians and sanitarians. With our livestock authorities and breeders it is an economic question. Breeders cannot afford to allow the disease to run unchecked. Neither can they afford to submit their herds to slaughter as a health measure at the present price they receive for milk and meat.

Other measures for controlling tuberculosis have been tried and still more considered. An approved tuberculin test and physical examination are required on all bovine animals brought into the state for any purpose except for immediate slaughter. This test and examination are provided for by law. It has never been possible to enforce it perfectly, yet it is considered a wise provision and has been the means of excluding much infection from outside sources. Several years ago the state assumed control of the health of public animals, or those belonging to state institutions. Tuberculosis has caused extensive losses in all such herds. Most of them now have tuberculosis free herds. They furnish a good example of what can be accomplished in a large herd if properly managed.

Breeders have had an opportunity for the past twenty years to make use of what has been known as the Bang system for controlling tuberculosis. This plan consisted of testing the herd, separating the reactors from the nonreactors and raising calves from both on pasteurized milk or that obtained only from nonreacting cows. A frequent inspection was made of the animals in the tuberculous herd and all those showing physical signs of the disease and especially of the udder were slaughtered. The milk from the tuberculous herd was pasteurized and sold for human consumption. Raw milk is seldom consumed in foreign countries. Theoretically the Bang system was considered quite ideal. In America it has not proved popular. It requires two sets of buildings. The owner is seldom equipped with sufficient stable and pasture room for more than one herd. He soon tires of having animals around that he believes to be diseased; his diseased herd is considered more or less of a menace in the neighborhood; in a sparsely settled community most people know that the herd is diseased and nobody wants the milk, even though it may be carefully and cleanly handled and properly pasteurized. There are a few herds operating under this plan at present in Pennsylvania. Enough has been done in this line to demonstrate that a healthy herd can be raised in this way from one that is badly infected with tuberculosis. The plan cannot be looked upon as one that will furnish much assistance in the extermination of tuberculosis.

Much tuberculosis has been spread by public creameries, skimming stations, etc. Swine and calves that are fed on refuse from such stations are usually heavily infected with tuberculosis. The state has tried in various ways to prevent such infection. An energetic effort has been made to have such products properly pasteurized. When sour milk is submitted to a temperature of about 180° F. the casein is coagulated, and calves do not like it. The farmer objects to hauling hot milk. No satisfactory system for cooling such products and keeping them cold has yet been discovered. Pasteurized milk soon spoils in hot weather if it cannot be kept cold. For these reasons such pasteurization has gained but little favor with the average dairyman. Most of the best breeders have arranged to prevent this source of infection.

There has been considerable improvement in the past few years in the line of more sanitary housing conditions for our livestock. The value of sunlight, ventilation and drainage is much more appreciated than in former times. There is room for much improvement yet before satisfactory conditions are obtained. The modern dairy barn is a decided improvement over those in common use twenty and more years ago. It has not been possible to construct a stable with sufficient sanitary equipment to prevent the spread of tuberculosis. It is not unusual to find badly infected herds in the most modern stable, and even in range cattle in the West that have never been housed.

In dealing with tuberculosis in cattle the herd and not the individual animal has been considered the unit. An effort is being made at present to make a neighborhood, a township, or a county the unit. Many feel that the possibility of maintaining a tuberculosis free herd in a community surrounded by tuberculous animals is impracticable. The federal and state authorities are trying to encourage community cleanups in every way possible. This work has been started in certain sections, and is meeting with considerable favor. Before this plan can make much progress in Pennsylvania it will be necessary to provide legislation that will permit counties to appropriate money for this purpose. Certain counties in the state have already considered the plan, but are waiting for legislation to authorize the work.

In 1900 Leonard Pearson began an extensive experiment on the subject of the Production of Artificial Immunity Against Tuberculosis in Cattle. With the assistance of Dr. Ravenel, Dr. Gilliland, Dr. Deubler, Dr. Reichel, and others, the work was carried on for the following nine years. The experiment was concluded about 1910. The report of the work done and results obtained was made in 1915 by Dr. S. H. Gilliland for the State Livestock Sanitary Board of Pennsylvania in *Circular No. 32.* The daily papers have recently called attention to similar work done by Calmette in France. So far as we know nothing new has been added to the information already published in Gilliland's circular.

It is generally understood that tuberculosis in animals is communicable from animal to animal; that if it is allowed to run unchecked in a herd it will eventually render a large percentage of the animals unprofitable and worthless. Any measures for controlling it must be based upon a practical application of the principles of bacteriology. The better these facts are known the better will be the results obtained in controlling the disease.

Surgical Complications of Pneumonia*

By MOSES BEHREND, M. D.,
Philadelphia.

Pneumonia extending beyond the nine day period signifies that a surgical complication has arisen, the most frequent being a collection of fluid in the pleural cavity or in lung itself. This fluid may be serum or pus, usually the latter. Physical examination is of great assistance in the determination of the presence or absence of fluid, but entire dependence must not be placed on our ability to read the signs by means of inspection, palpation, percussion and auscultation. The best knowledge will be derived through auscultation, percussion and palpation. On palpation, where formerly during the course of pneumonia there was a marked increase in tactile fremitus, absolute absence of the transmission of the voice to the fingers follows. Percussion gives a flat note where formerly there was a dull sound. Auscultation gives the most varied phenomena. When fluid is present one expects an absence of all sounds transmitted to the ear, but very often fluid, especially pus, acts as a good medium in delivering exaggerated breath sounds to the stethoscope. Ordinary diagnostic means fail, necessitating the help of, first, the aspirating needle, and, second, the x ray.

Aspiration should be performed in an aseptic manner; the needle should be introduced attached to the rubber tube. Although there have been some isolated reports of the dangers connected with aspiration, the fatal cases have been so few and far between as to be of a rather negligible quantity. If the seventh or eighth interspace just medial to the posterior axillary line is selected, there ought to be practically no danger in the aspiration of the chest.

Next in importance in finding fluid in the thorax is the x ray. Its importance is conceded, but the reports from radiologists vary somewhat as to their ability to read the plates or diagnose what they see through the fluoroscope. In the future, physicians will have limited ability to read the signs if their recourse to the x ray laboratory is not restricted. The physician is too ready to avail himself of the opportunity of having an x ray taken, rather than examine the patient first and draw his own conclusions. Only recently my attention was called to this indiscretion when the attending physician asked for an x ray study before he examined the patient. The same may be said of the pathological laboratory. Everyone will admit that laboratories are essential, but we should at least make the necessary physical examinations, and then resort to our instruments of precision.

---

*Read before the Jewish Hospital Clinical Society, Philadelphia, January 25, 1921, as part of a symposium on pneumonia.

A diagnosis of empyema having been made, our course of procedure will depend on the bacteriological report. In two per cent. of all cases of lobar pneumonia empyema develops. It is a well established fact, since our experience with the recent influenza epidemic, that a streptococcus hemolyticus infection must first be aspirated, a major operation being contraindicated until the pus becomes milky. Illustrative of this point I want to cite a case that I saw in consultation with Dr. Eshner and Dr. Karpeles. We all agreed that fluid was present, but the surgical aspect of the case was left to the writer. On account of the extreme toxemia, rapid pulse, and precarious condition of the patient, I advised an aspiration, which was repeated again in a few days. The symptoms subsided a little, but there was still fluid present which required a thoracotomy without rib resection. Her condition improved after this, but it was apparent that there was not sufficient drainage. Finally, when the condition of the patient warranted it, a rib resection was performed. Although there was a prolonged convalescence following this operation, the patient made a perfect recovery. There is no question that this patient would have died if a major operation had been substituted for the initial aspirations. When one deals with a streptococcic infection, not hemolytic, or a staphylococcic or pneumococcic infection, one can proceed at once and perform a rib resection.

There seems to be some difference of opinion as to the distinct entity of gangrene of the lung. While gangrene has pus in its exudate, it is distinct and separate from an abscess of the lung. The putrefactive organisms usually separate the abscess from gangrene. One may have fetid pus from an abscess, but this is not gangrene.

The proper time to operate on an abscess of the lung requires the nicest judgment. If the abscess ruptures into a bronchus, no surgical interference is necessary, provided the symptoms subside and the patient is able to expectorate the pus. If an abscess of the lung has been diagnosed, an operation in two stages is ideal if the visceral and parietal pleura are not adherent. Where the latter is present it is not necessary to perform the two stage operation, as the object of the first stage is to obtain an adhesion of the two pleural surfaces. The prognosis after operation of abscess of the lung is good, but little hope can be given in gangrene of the lung, whether operated upon or not. This does not mean that in some cases of gangrene the patients fail to recover, but mortality among my cases has been one hundred per cent. The prognosis after operation for abscess of the lung is good.

The other surgical complications of pneumonia are superficial abscesses affecting any part of the body, parotid abscess, arthritis, osteomyelitis, purulent peritonitis, phlebitis, otitis media, acute hepatitis, appendicitis, and subphrenic abscess. Pregnancy and jaundice may become surgical complications; in the former if an abortion occurs, in the latter when stones become active or as a forerunner of gallbladder disease. Pregnancy is a serious complication on account of the high mortality (twenty-two to fifty-two per cent). During the last epidemic it was probably higher than this. There seemed to be some unexplainable relationship between the two conditions. It has been said that pregnant women resist pneumonia and other infections. This was not the case, however, in the recent epidemic, when they seemed to be most susceptible.

An abscess of the parotid gland is considered a bad omen when it occurs during the course of a chronic affection, but when it accompanies or follows pneumonia it has particular significance. Many inflammations of the parotid gland resolve, but when pus is present incision and drainage should be instituted. An opportunity here presents itself to caution against long continued drainage by means of gauze and tubes in any kind of an infection. Pus cavities need not be drained with tubes and gauze longer than seventy-two hours. The tract is kept open by daily irrigations and application of dichloramin-T or other medicaments.

Pneumonic arthritis and osteomyelitis are rare affections. During the past six years I have seen two cases in which a pure pneumococcic culture had been isolated. When an abscess occurs in a joint never drain the joint itself, but put drainage adjacent to it. This will help to conserve the cartilages and thus prevent ankylosis. In arthritis and osteomyelitis one cannot be too quick in evacuating the pus, because when inflammation attacks these structures the destructive effects are widespread on account of their poor resistance.

Purulent pericarditis (twelve and six tenths per cent., found postmortem) shows that we are not sufficiently on the alert to recognize this condition. If there is any suspicion at all of its existence, an exploratory needle inserted in the fourth or fifth interspace is a harmless procedure. Last year, in consultation with Dr. Eshner, I saw a young man who had had pneumonia, followed by pleurisy and pericarditis with effusion. The left side was aspirated, a muddy blood colored fluid was obtained, the same character of fluid having been drawn from the pericardial sac. Relief was obtained, but the boy continued to be mortally sick for some time. A little later we repeated the aspiration, with added relief of symptoms. Six months later the same phenomena appeared, although the infection was not as severe. He was aspirated again, the same character of fluid being obtained. He finally made a complete recovery after a lingering convalescence.

Phlebitis does not usually require anything except rest in bed, the application of cold and evaporating solutions, such as alcohol, Burrow's solution, or lead water and laudanum. In severe cases it means a rest of four to six weeks with the leg in an elevated position.

Pneumonic peritonitis may be considered a distinct entity, but it is not impossible to have it as a complication of pneumonia. The cases in which I have operated seemed to be independent of a lobar pneumonia. It occurs in the great majority of cases in the female. There are two varieties, the localized and the diffuse. In the former, the patients may get well after operation; in the latter, never. The symptoms are those of serious peritonitis which cannot be absolutely differentiated from appendicitis, with its complicating local or diffuse peritonitis. The differential point which helps in the diagnosis from lobar pneumonia is the fact that the respirations are not excessive and the facial characteristics of pneumonia are absent. Most authorities agree that in diffuse peritonitis due to a pneumococcus infection it is best to wait until the pus becomes localized, but I am also certain that many cases of appendicitis will be missed if this is strictly adhered to.

The occurrence of appendicitis brings up the important difference between pneumonia and appendicitis. The closest observation and the finest diagnostic acumen are required to differentiate between them. Even before the symptoms of pneumonia are absolute, the one diagnostic point that has helped me more than any other is the respiratory rate, with the playing of the alæ of the nose and the bright flush on the cheeks. The child (because we are called upon to make this differentiation mainly in children) is not able to help the physician much to arrive at a conclusion. The mechanism which causes the inability to make a definite diagnosis at times is no doubt known to all of you. The last thoracic nerves send filaments over the abdominal wall, giving rise to referred pain in the right iliac fossa. The best advice that can be given is that the appendix should be removed under gas and oxygen whenever we are in doubt. Cases could be cited to illustrate this point, but it is satisfying to know that in the cases in which pneumonia developed, due to an error in diagnosis, the patients recovered. It happens that in my experience more cases have been diagnosed pneumonia which were really appendicitis.

Otitis media seems to be on the increase. One never experienced formerly the great numbers of inflamed drums and mastoid conditions that are diagnosed at the present time. Some pediatrists call every ear drum they examine inflamed, subjecting, it seems to me, many children to unnecessary operations. In former years, when I operated on many mastoids, we did not perform such extensive operations as are being done at the present time. The results were good and the convalescence was a comparatively short one.

Subphrenic abscess should be treated as an ordinary empyema. The diagnosis is made in exactly the same manner by means of physical examination, aspiration, and the x ray. All manipulations should be made without encroaching on the pleural or peritoneal cavities. The prognosis is good.

In conclusion, I would say that the most frequent complication of pneumonia, namely, empyema, must always be suspected when the disease extends over the nine day period. While empyema occurs in two per cent. of cases, all the other surgical complications mentioned are seen in less then one per cent. of those suffering from pneumonia.

1427 North Broad Street.

Generator of Constant Current for Production of X Rays

By SINCLAIR TOUSEY, M. D.,
New York.

In 1913 (1) I described an improved x ray generator, and had previously suggested in the first edition of my book (2) the desirability of a high tension current of unvarying direction and voltage for the production of x rays which I hoped would prove to be approximately homogeneous. The idea would have been to have all the cathode particles travel with the same velocity as the effect of a uniform pressure.

The x ray ordinarily is made up of different wave lengths comparable to those of ordinary light. The more rapid vibrations have greater penetration in the sense that a greater percentage of the rays will pass through an obstacle. They produce a smaller surface effect and a greater deep effect than an equal quantity of x rays of less rapid vibrations. Ordinarily some of the rays have so little penetration that they are absorbed by the most superficial tissues and take no useful part in radiography or deep radiotherapy, and for the latter are detrimental. These soft rays may be present in such a proportion as to produce a burn if a sufficient amount of the accompanying penetrating ray is applied to produce the desired effect. Again, there are some x rays of so great penetration that different densities of tissue produce very little contrast upon the plate. The plate may be dense enough, but the picture is not nearly so good as if the rays had been of the proper medium degree of penetration. This darkening effect of the plate without sufficient contrast is in addition to the similar effect of the secondary rays arising in the tissues.

Altogether it seemed desirable to produce x rays of a uniform degree of penetration which could be regulated for the purpose in hand, to produce an effect upon either the surface or the deep tissues, or for a radiograph through little or great thickness of tissue.

The workers in the great laboratories have shown that homogeneous x rays do exist. For example, heterogeneous x rays of sufficient penetration impinging upon silver, or aluminum, generate secondary x rays which have a uniform wave length characteristic of each particular metal, and which are more rapid the higher the atomic weight. In fact, each substance has two characteristic wave lengths, but one is much more abundant than the other. Homogeneous x rays are also obtainable by a process analogous to that for obtaining homogeneous, say blue, rays from sunlight by means of a prism or of a diffraction grating. Röntgen rays may be separated into a spectrum by diffraction from the cleavage plane of certain crystals. Each part of the spectrum consists of x rays of the same rate of vibration different from all the others.

Homogeneous x rays have also been produced by first obtaining cathode particles of uniform velocity. The cathode stream, when deflected by a magnet, undergoes a separation into a spectrum, and a suitably placed slit will allow the passage of cathode particles of only just the desired velocity, which, when the particles impinge upon an anticathode of a certain material, will produce that material's characteristic homogeneous x rays. These sources produced x rays of a uniform wave length in sufficient amount for many interesting experiments, but not for any practical use in radiography or röntgenotherapy.

My generator and some others devised for the same purpose fulfill the requirement of a high tension direct current varying neither as to direction or voltage or milliamperage, and being continuous. These properties are easily demonstrated by the oscilloscope, but tests applied to the x radiance produced show that homogeneous x rays have not been obtained.

Tests applied in research laboratories to the x rays produced by the constant high tension current generator showed that the x rays could be separated into a spectrum just as with an ordinary generator. My own test is the more direct one of measuring the degree of penetration of the x rays before and after they have passed through an aluminum filter three millimetres thick. The filter was at as great a distance as practicable from the photographic film upon which the test with the Benoist radiochrometer was made. This distance and the fact that aluminum gives out very little secondary radiation made it probable that any noticeable change was due to a difference in the rays transmitted and not to an admixture of secondary x rays. Our belief is that homogeneous rays pass through most or all substances unchanged except as to quantity. And it is well known that when heterogeneous x rays pass through most or all substances, a greater proportion of the soft rays than of the hard rays in the original radiation pass and the average transmitted rays are usually or always harder than the average original rays. My test of the x rays from a generator of unvarying high voltage shows that when the original rays are about five Benoist, those that have passed through three mm. of aluminum are about seven Benoist. This seems to indicate very clearly that the radiation was not a homogeneous one, but contained a mixture of harder and softer rays. It certainly indicates the desirability of using an aluminum filter when it is necessary to secure as much deep effect as possible, and therefore to reduce to a minimum the admixture of soft rays which, if present, would be absorbed to so great an extent by the superficial tissues, and exert in that case an undesirable effect there.

A feature of great value is that the unfluctuating current is much less destructive to the anticathode than the usual impulsive current. The latter breaks up the surface of the focus spot of a tungsten target like a plowed field, while the former leaves it smooth even after many overheatings.

Another feature is that the x ray radiation from a tube actuated by an unfluctuating current is greater than an impulsive current of the same voltage and milliamperage.

The new generator proves not to have the advantage which was sought in its invention, but it does prove to have these two unexpected advantages which render it very useful.

REFERENCES.

1. TOUSEY, SINCLAIR: An Improved X Ray Generator, NEW YORK MEDICAL JOURNAL, March 29, 1913.

2. *Ibid: Medical Electricity and Röntgen Rays,* Philadelphia, W. B. Saunders Company, 1910.

850 SEVENTH AVENUE.

Advanced Pathological Conditions Observed in South China

By J. OSCAR THOMSON, M. D.,
Canton, China.

The Canton Hospital is the oldest hospital in China and the largest in South China. Since its foundation in 1835 over two million patients have been treated in this hospital and its dispensaries. It is the chief clinical centre for a population of over forty millions, which at the present time has only one hospital bed for over ten thousand people.

The Province of Kwongtung corresponds roughly to the geographical situation of the northern half of Mexico. During the past ten years the summer temperature was maximum 102°, mean 86°. The humidity usually is 97 to 99. The winter temperature was minimum 34°, mean 58°. During the autumn and winter months, the dry season, the average rainfall was an inch and a half a month. In the spring months the rainy season, when the sky is overcast most of the time, the rainfall is approximately five inches a month. In the summer there are frequent destructive typhoons, accompanied by torrential rains, giving an average of ten inches monthly. The majority of the inhabitants are agriculturists, living in villages.

Wah T'oh, who flourished in the twelfth century, was a bold operating surgeon. Tradition represents him as accustomed to operate for necrosis of bones, and he was put to death and his works burned for proposing to trephine the Emperor. He is now the god of medicine. Subsequently, until the introduction at the Canton Hospital of scientific medicine, ignorance of this subject among the Chinese was profound. Owing to superstition, ignorance, and inadequate means of transportation, the greater number of the people have not yet availed themselves of the services of modern medicine and surgery.

Seventy-five per cent. of the patients admitted to the Canton Hospital present advanced pathological conditions. The general condition of the patients is poor. They are weak, emaciated, and anemic from infection from malarial and intestinal parasites. The local condition is usually advanced; in the case of tumors and abscesses, large, heavy and deepseated, with pressure symptoms, frequently extension and metastasis have already occurred. Deformity is present and function diminished or lost. Severe pain usually sends the patient to the hospital. Many of the patients have already been treated by the Chinese old style medicine men, who aggravate the condition by acupuncture, cauterization, and the application of irritant plasters, which cause dermatitis, cellulitis, ulceration, cicatrization, adhesions, keloid formation, and hasten malignancy.

CONGENITAL ABNORMALITIES.

Unrelieved phimosis is responsible for retention of urine, resulting in cystitis and the formation of vesical calculus. In male children imperforate anus causes autointoxication, and in females, rectovaginal fistulæ are produced.

INFECTIONS.

Blastomycosis is prevalent, situated usually upon the hands and forearms and also upon feet, legs and thighs.

Marked entropium, occasionally ectropium, following trachoma, is extremely common. A patient with symblepharon had his left eyelids closed for fifteen years. The cilia were entirely obliterated and the tarsi firmly united, except at the inner canthus, where there was space enough to admit a probe. Upon separating the lids with the scalpel, the eye was found to be perfect.

Abscesses caused by the pyogenic organisms are large, burrow extensively, and frequently cause septicemia and pyemia. Cellulitis and angina are often seen when the patient is in extremis, as are also cases of cancrum oris, which, however, have been checked with intravenous instillations of antiseptics.

Ulcers are large and difficult to cure. In a child six years of age, with large ulcers of the scalp, one hundred maggots were found burrowing under the borders. Gangrene is occasionally due to bound feet. In the case of a patient who was admitted to the hospital six weeks after having been bitten by a snake, the hand had become gangrenous and sloughed off; the radius and ulna were entirely bare except for ligamentous attachment at the elbow joint (Fig. 1). A woman, both of whose legs had sloughed off, had preserved them in lime and brought them to the hospital with the request that they be grafted on again. Necrosis of the inferior maxilla, secondary to carious teeth, is common. Occasionally half and even the entire mandible has sometimes already separated. In a case of caries of the right humerus, following an attack of fever six years previously, a portion of the shaft of the humerus had separated and projected obliquely through muscles and skin, in which position it had been for two years. The sequestrum was four inches long and half an inch in diameter. In a child two years of age with necrosis of the radius, there were two sequestra almost the entire length of the bone. In a case of perforated gastric ulcer, the abdomen was filled with large quantities of viscid lymph. Cases of intestinal obstruction of from twenty to forty days' duration have been treated. Fistulæ in ano, hemorrhoids and prolapse of the rectum are prevalent and extensive.

TUBERCULOSIS.

Osteomyelitis is a common condition. The sequestrum has usually separated. The tubercle bacillus most frequently affects the hip, and as a rule the joint is ankylosed, with abscess and sinuses. Psoas abscesses are usually present in disease of the spine. In one case the appendix was adherent to the wall of the abscess. A woman with tuberculous coxitis from childhood, in which the thigh was ankylosed at an acute angle, and in which the pelvis was markedly contracted, was brought to the hospital pregnant. A Cæsarean section was performed. Both mother and daughter left the hospital in good condition. Adenitis is most commonly cervical, and the average duration of disease upon admission, one year. Previous antiquated treatment is responsible for adhesions, ulceration and cicatrization, so that rational treatment is rendered much more difficult. Peritonitis can only be aired. Mesenteric glands are usually too large and extensive for operation.

VENEREAL DISEASES.

Venereal diseases are more prevalent among soldiers and welltodo residents of cities—rather uncommon among the agricultural and laboring classes. The Chinese marry young. Postgonorrheal stricture with retention of urine is a condition frequently treated, sometimes from seven to ten days, with extravasation of urine and gangrenous scrotum. In females, in cases of salpingitis and pelvic peritonitis, the organs are hopelessly matted together. A woman, aged twenty-three years, had a parovarian cyst and salpingitis which were intimately adherent to the neighboring organs. Chancroid and bubo are common in young adult males, with severe cases of sloughing phagadena. Although cases of primary and secondary syphilis are frequently seen, late tertiary lesions with considerable destruction of the tissues require treatment. In one case the penis was entirely gone, and there was a large opening into the bladder. A male had an aneurysm of the suprascapular artery of six years' duration, which was two feet in circumference at the base. Native physicians had applied escharotics.

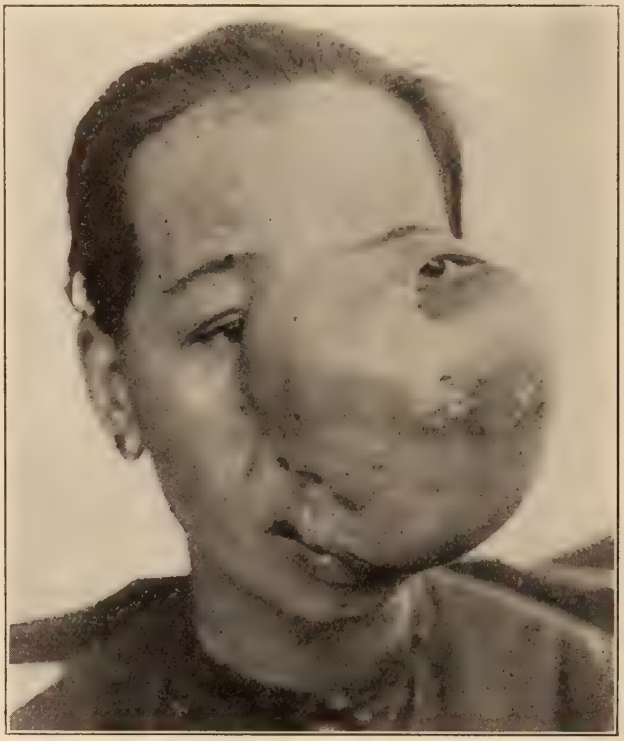
The average duration of disease as given by the patients upon admission to the hospital for vesical calculus was three and a half years, the longest thirty-one years. Twenty per cent. of the cases were of more than five years' duration, of these twenty-five per cent. were of more than ten years, and four per cent. more than twenty years' duration of symptoms. The average weight of stone was seven and a half drams. A male, aged twenty-three, with symptoms for seventeen years, had three calculi which completely filled the bladder. Another male patient, with symptoms for over twenty years, had a stone twelve ounces in weight. A male of twenty-one had a tumor the size of half a peach under his urethra, about the middle of the penis, which had been enlarging for twenty years. Two hundred and ninety-one calculi were removed from the urethra and from a sac communicating with it by a narrow passage. A male aged seventy-two had a hundred and sixteen calculi under the prepuce. A boy of nine passed urine from his navel. The rectum was extensively prolapsed, and there was a calculus in his scrotum tightly enclosed in a sac communicating by a small opening with the urethra. A boy of sixteen had an opening above the pubes through which his urine discharged. The entire skin of the penis was nonadherent, except at the base and at two other spots.

PROTOZOAN INFECTIONS.

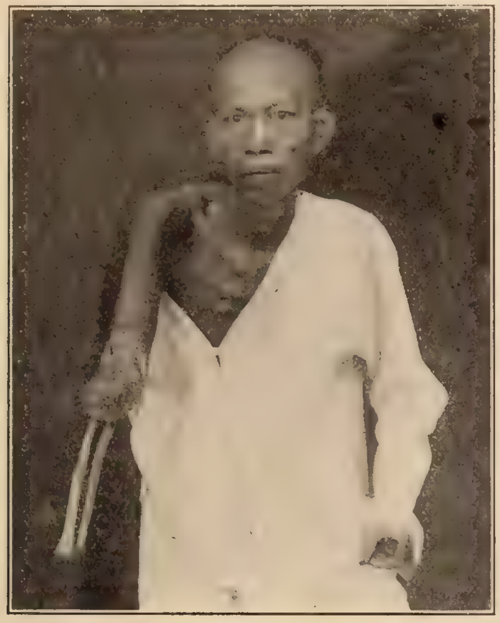
Liver abscesses, due to the ameba and secondary to dysentery, are usually large. Seventeen pounds of pus was removed from the liver of a boy of fifteen. The average duration of disease in patients admitted to the hospital with elephantiasis due to the Filaria sanguinis hominis was five years. The condition usually affects the penis and scrotum and leg, less frequently the leg and vulva, and other regions. Twenty - one pounds of elephantoid material was excised from the scrotum of a male patient who had had this condition for six years. A male aged forty-four, with elephantiasis for seventeen years, presented, besides a considerably enlarged scrotum, legs two and a half feet in girth, with tumors three and a half feet in circumference. A female who had lost most of her nose from syphilis, had elephantiasis of the labia of seven years' duration. The tissue removed weighed sixteen pounds. Malaria is responsible for splenomegaly, which usually fills the abdomen, with extensive adhesions. In thirty per cent. of the routine fecal examinations of inpatients during the past five years, the ova of trematode, cestode or nematode worms were found. In wounds of the intestines, worms are sometimes found in the peritoneal cavity. In ninety-eight per cent. of the cases of vesical calculus, ova of intestinal parasites were isolated. In one case a worm formed the nucleus of the stone. Frequently several different varieties of parasite are found inhabiting the same patient; as many as four varieties have been isolated from one patient. Over two hundred worms have been recovered from one patient. Autopsy revealed, in one case, subacute general peritonitis, leftsided pleural empyema, congested lungs, enlarged spleen with increase of trabeculæ, fibrosis of the liver. The bile passages were filled with clonorchis sinensis, about a hundred being removed from the cut surface.

TUMORS.

Tumors of all varieties and of all regions of the body are observed. They are massive and weighty, and cause discomfort or pain, as well as deformity and interference with function, and usually show indications of having been treated with the cautery or caustic plasters. Seventy per cent. are benign and thirty per cent. malignant. Exploratory laparotomies very frequently show internal tumors to be inoperable. Pterygium is a very common condition. Unusually large sarcomas of the orbit are seen. A sarcoma covering the whole side of a patient's face had commenced fifteen months previous as a small papule situated on the left upper eyelid. A girl of fourteen had an angioma of the upper lip the size of an orange. A male of fifty-six presented a tumor of the carotid body of twenty years' duration. Carcinomata of the lip are frequently double (contact), and of the tongue generally inoperable. A large sarcoma of the posterior pharynx was successfully removed after a preliminary tracheotomy. Parotid tumors are large and fixed. In one case it was two and half feet in circumference and extended from the orbit to the shoulder. A tumor weighing nine pounds was removed from a male of thirty-four who had carried it for ten years. A male patient, aged forty-six, had a lipoma about three and a half feet in circumference with attachment at the scapula and extending below the nates. A lipoma, over twenty-one pounds in weight, of twenty years' duration, was removed from a male aged fifty-eight. Lymphosarcoma, usually cervical, at first unilateral, is a common condition, the average duration of disease upon admission to hospital being a year and a half. Many become operable after ligation of the supplying arteries. A male, aged forty-one, had a firm tumor, as large as his head, hanging pendulous from his neck, of seventeen years' duration. The tumor was diseased centrally, having been perforated by escharotics, with an aperture a half inch in diameter and as regular as if it had been made by a drill. The patient kept it closed with a stopper,


Sarcoma superior maxilla.

every morning evacuating some ounces of pus. The tumor was two feet in circumference and weighed seven pounds. Tumors of the thyroid are often intrathoracic when they come for treatment. In one case of twenty years' duration, pieces of cartilage and bone were found in the tumor. The patient was thirty-one years old. A male, aged thirty-five, with osteosarcoma of two years' duration, presented a knee over thirty-two inches in circumference. The normal member measured twelve inches (Fig. 2). The average duration of disease in cases of carcinoma of the penis was one and a half years. Inguinal adenitis is usually present. In a boy of fourteen with large bleeding sarcoma of the testes, the lower abdomen was filled with glands. A sarcocele of twenty months' duration, weighing five pounds, was found to consist of numerous cartilaginous sacs, in which large quantities of bone were deposited, presenting a coral like formation.

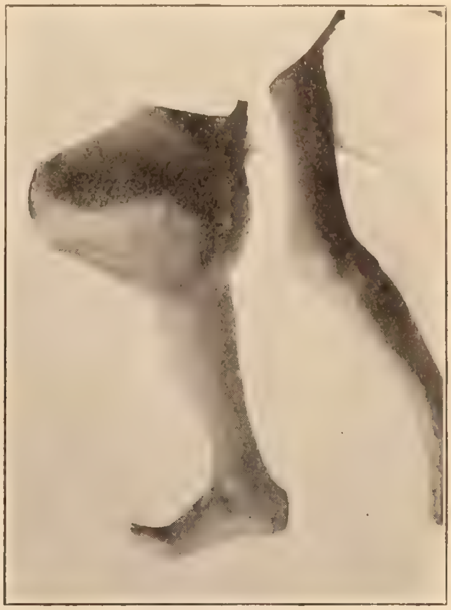


Gangrene, following snake-bite. Patient operated upon in the Canton Hospital successfully.

Hypertrophied prostates are not common. They are associated with multiple small calculi.

The usual duration of adenomata of the breast upon admission was three years—of carcinoma, two and a half years. There is usually axillary adenitis. Occasionally, due to local treatment, the superficial tissues have ulcerated. A tumor of the right breast, of six years' duration, was two feet in circumference, and extended nearly to the hip. A woman, fifty years of age, was relieved of a tumor of the breast of eleven pounds' weight, which had been growing for ten years.

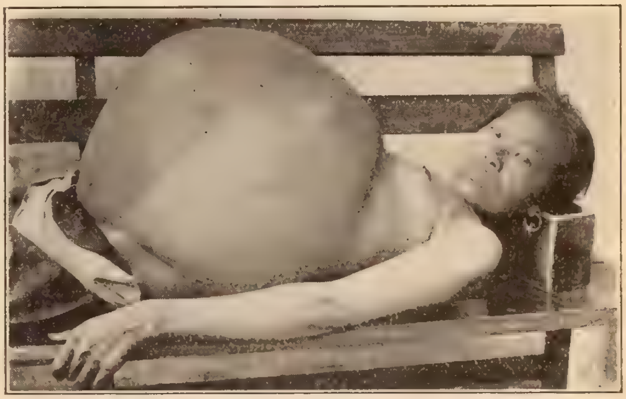
The average duration of ovarian tumors upon admission to the hospital is three years. They are very frequently adherent to adjacent organs and to the parietal peritoneum. A girl of sixteen had a dermoid tumor of six years' growth, which was filled with hair, sebaceous material, muscle fibres, skin and bone. A cyst adenoma which weighed a hundred and sixteen and a half pounds was removed from a patient who subsequently weighed seventy-nine pounds. A fibroid of eight years' growth, weighing twenty pounds, was resected. Papillomata of the ovary and tube with extension of the growth covering the surrounding organs have been seen. An ulcerated fibroid polyp was completely extravaginal, having caused prolapse of the uterus. The mucous membrane of a uterus which had been prolapsed for ten years resembled tough skin.



Osteosarcoma, amputation at hip joint.

TRAUMA.

Wounds are frequently septic when admitted to the hospital. Native quacks fill them with tobacco and similar substances, in order to arrest hemorrhage, or with ointments, or cover them with plasters. Burns and scalds are treated in a similar manner. Marked deformities from the contraction of cicatrices and neglected conditions and occasionally bony union of the jaws following injury require treatment. Incarcerated and strangulated herniæ are frequently seen. One case presented an unusually large patent Meckel's diverticulum. Hernia is sometimes associated with urethral stricture or vesical calculus. Foreign bodies removed are commonly bullets, fragments of bombs, pieces of



Ovarian cyst adenoma successfully removed.

bamboo or needles. A piece of iron an inch and a half long and three quarters of an inch wide was removed from the left nostril of a patient, where eight years ago it had been embedded when his gun exploded.

A young man was shot in the neck by pirates. The bullet, weighing two drams, entered the right side of his neck, passing between the esophagus and vertebræ and wounding both. Several months later fragments of two vertebræ with the intravertebral cartilage were discharged by mouth. Large lead slugs are used by the pirates and robbers. The wounds are therefore severe and fractures usually comminuted with considerable loss of substance. In abdominal wounds, peritonitis is often present, the abdomen is full of blood, or intestinal parasites may be seen wandering from their normal habitat in the intestine. Many cases of fecal fistula require to be repaired. Gored wounds of the abdomen are sometimes seen in boys.

SUICIDE.

Suicide among the Chinese is fairly frequent. Feuds and jealousies in families and distress among the working classes are the chief causes. Women sometimes resort to hanging and men more frequently to opium. A female patient completely severed both trachea and esophagus. One patient cut off the end of his tongue. One committed harikari, performing abdominal section in eight places. A dozen cut their throats, one completely severed both trachea and esophagus. A woman inserted thirteen needles in a piece of orange rind and swallowed it. A male drove a five inch nail through his abdomen to the spine with a brick. A young woman fell from a ladder and a bamboo pole an inch in diameter, sawed off square, entered the right axilla, passed upwards, fractured the clavicle, came out and reentered the side of the neck, perforated the trachea and esophagus and was arrested by the hard palate of the opposite side. Fluids and air passed out at the side of the neck. She recovered.

TRAUMATIC INJURIES.

A man, aged thirty-one, was robbed of his money, and then both of his feet were cut off by the robbers in order to give them time to escape before he could report them.

One of the cases seen was a man of forty, who applied to a Chinese doctor to relieve him of stricture, who introduced a copper fork, over three inches long, handle first, into the urethra, when it slipped through his fingers and passed entirely within where it had remained for two weeks. A bullet was extracted from the forehead of a soldier which had entered its full length, but had been arrested by the inner table, where it had remained for two months. A boy, two years of age, fell from a chair, striking an earthen wash basin and breaking it, a fragment of which produced a punctured wound of the abdomen through which eighteen inches of small intestine had escaped and become strangulated.

In another case a patient, holding in his hands a glass vessel containing over a pound of gunpowder, a spark dropped from a lighted cigarette he was smoking. This caused an explosion which blew off his hand and deeply embedded pieces of glass in many parts of his body. With the röntgen rays a sharp angular piece of glass nearly an inch in length lying close to and rather beneath the femoral artery was found and removed. A man fell from a roof, a splinter of wood entering for five inches through the sphincter and prostate. For three years it was *in situ,* protruding for more than an inch. He voided urine from a fistula above the pubes and was reduced to a skeleton.

Another case was a girl, aged sixteen, who had an aneurysm of the temporal artery, high up on the head caused by a blow inflicted by a playmate with a pillow made of bamboo. A male patient fell from the roof of a house fracturing his right humerus, which did not unite. When admitted to the hospital, the elbow, which contained an aneurysm, measured thirty-one inches in circumference. The limb when amputated at the shoulder weighed twenty-three pounds.

Fractures and dislocations are often seen at a late stage, ununited or malunited, with neighboring joints ankylosed. Dislocations frequently are irreducible, and require resection of the head of the bone or arthroplasty. Stricture of the rectum is sometimes due to treatment by quacks of hemorrhoids with caustics. A woman whose finger was much swollen and ulcerated had four rings embedded in the mass. Two rings were broken and removed. Two other brass rings were hanging to the flesh as if they had worked their way through the bone during a period of five months.

Pregnancy and labor account for many cases of advanced pathology which require attention. The perineum is often completely ruptured, with resulting partial incontinence. In cases of vesicovaginal fistulæ associated, the vagina may be walled off by scar tissue. A ruptured uterus is sometimes seen in cases of transverse presentation. Occasionally the head is pulled away from the body by midwives, or the body from the head in cases of breech presentation.

Dog and pig bites may be the cause of fistula of the penile urethra in male children.

COMPLICATIONS.

A large number of cases admitted to the Canton Hospital are not content with one pathological condition. From chronicity or neglect, or due to their poor condition, they present complications or coexisting disease, as is illustrated by the following cases:

A male, aged nineteen, with ten years' duration of symptoms and a six ounce vesical calculus, had scoliosis, attributed to the position he occupied in order to get relief from pain. A male, aged sixty-five, had postgonorrheal stricture with false passages, hypertrophied prostate, cystitis, eight vesical calculi, double inguinal hernia and hemorrhoids. A woman with complete retention of urine, with a vesical calculus, had had constipation for ten days and prolapsus uteri since the birth of twins. A woman with retroverted gavid uterus and retention of urine for twenty-five days required to be catheterized for a month after the removal of nineteen pounds of urine.

Elephantiasis with Reference to Syphilis*

By JOSEPH LINTZ, A. M., M. D.,
New York.

Elephantiasis has been defined as a "progressive histopathological state or condition which is characterized by a chronic inflammatory fibromatosis or hypertrophy of the hypodermal and dermal connective tissue which is preceded by and associated with lymphatic and venous stasis, and may be caused by any obstruction or mechanical interference with the return flow of the lymphatic and venous currents in the affected parts" (1).

Elephantiasis is considered as nonfilarial and filarial. The nonfilarial type is caused by mechanical obstruction, such as carcinomatous or tuberculous masses, or following operative interference with lymphatic drainage after extirpation of axillary nodes for mammary carcinoma. Matas (1, 2) and Prout (3, 4) and others have insisted that mechanical obstruction alone is not sufficient to induce elephantiasis; that with the obstruction infection must be superimposed, a general streptococcus reticular lymphangitis. They considered elephantiasis as a subacute or chronic recurring erysipelas, generally at first with fever which becomes less in subsequent attacks, and the condition is called elephantiasis streptogenes. When, however, no evidence of a direct, mechanical agency can be shown, and when no direct source of infection can be found in the affected part, the elephantiasis is invariably called filarial in origin, generally without any other basis save that of exclusion. This brings us to a consideration of Filaria Bancrofti.

In many of the tropical and subtropical regions, twenty-five to thirty-five per cent. of the inhabitants show in their peripheral circulation, especially at night, tiny parasitic embryo organisms, the Microfilaria Bancrofti. These microfilaria, which circulate but do not multiply, are the immature offspring of the adult Filaria Bancrofti located in the lymph nodes or lymphatic tracts. However, an individual may be heavily infected with microfilaria and yet apparently be in perfect health. Thus in Charleston, S. C., Johnson (5) examined four hundred individuals in routine fashion and found seventy-seven, or nineteen and one fourth per cent., infected. Of these, fifty-seven cases, or seventy four and one tenth per cent., had a history negative for filarial symptoms. However, patients are found who show chylous ascites, chyluria, chylocoele, and varicose lymphatics (including the socalled varicose groin glands of Manson), in the fluid of which microfilaria are readily found. These patients generally, though not always, also show microfilaria in the blood.

The explanation generally given for this blockage is that of Manson (6), who found in the varicose lymphatics of two patients the aborted ova of the filaria. In these ova the microfilaria are present folded back and forth within a membrane so that the shortest diameter might easily block the lymphatics. When a sufficient number of lymphatics are thus blocked, the lymph is passed along through anastomatic channels until finally all of these are blocked. Then with lymphatic stasis and varicosity rupture of lymphatics readily takes place into the bladder, peritoneum, or tunica vaginalis. When the stasis begins at a point proximal to the point where the lacteals join, the ruptured lymphatics contain chyle. Manson accounts for elephantiasis in the same manner. Objections have been made to his filarial explanation of elephantiasis, his arguments being refuted or contraverted point by point: 1. The fact that filarial infection is a lymphatic disease, and that elephantiasis is a lymphatic disease, does not indicate that elephantiasis is necessarily filarial. 2. In some countries elephantiasis is fairly common, though microfilaria are not found. Thus Wellman (7) reports fifty cases of elephantiasis in a region where five hundred individuals showed no microfilaria in their blood. Similar reports show that Manson's statement that the geographical distribution of filariasis and of elephantiasis coincides, is not supported by facts. 3. The fact that elephantiasis of a leg may follow an operation for lymph scrotum, which is admittedly a filarial manifestation, does not imply that elephantiasis is directly caused by filaria, nor does the fact that elephantiasis and lymph scrotum are occasionally associated.

In addition it may be pointed out that in Amoy, China, Manson (8) found about ten per cent. of the population infected with filaria, and that of his cases of elephantiasis approximately the same percentage likewise showed filaria. Yet microfilaria were found in ten out of thirteen cases of lymph scrotum, and in nineteen out of twenty-three cases of varicose groin glands. He accounts for this discrepancy in elephantiasis by the blocking off caused by the aborted ova, so that later broods of microfilaria are unable to reach the circulating blood. In line with this, Stitt (9) states: "It is now well established that patients with elephantiasis rarely show embryos in the peripheral circulation, and this fact should be better understood because there is a tendency to negative a filarial diagnosis when embryos are absent from the peripheral circulation."

This etiological view of elephantiasis is reflected in the prognosis and therapy. Thus Manson (8) states: "The impossibility of permanent and thorough cure of elephantiasis is apparent: much may be done by the knife to remove deformity, and elastic bandaging and other devices for aiding the lymphatics still patent and the bloodvessels to carry off stagnant fluid; but permanent cure of the established disease is impossible." Stitt (9) further declares: "It may be stated, however, that salvarsan, arsenophenylglycin, and other similar remedies, have been without special effect in destroying the filarial worms."

---

*Read at the St. Luke's Hospital O. P. D. Clinical Society, January 23, 1920. From the St. Luke's Hospital Outpatient Department, Medical B Division.

In contrast to the relative wealth of material on socalled filarial elephantiasis and socalled sporadic elephantiasis of unknown etiology, scattered through the literature are found only several cases of nonfilarial elephantiasis associated with syphilis. Long before the discovery of the filarial organism, syphilis was considered by Allan Webb (10) in some cases the cause of elephantiasis of the penis and scrotum. In 1880 Klotz (11) presented a case of elephantiasis of a foot and leg of seven years' standing in a woman aged fifty-eight, with deep ulcers which were strongly suggestive of syphilis, and which improved with the internal use of corrosive sublimate. Frances (12) declared it not uncommon to have tertiary ulceration of leg accompanied by edema of foot. He said that in many instances this edema is transient and disappears under treatment; in others the lymphatic edema passes into a condition of true elephantiasis with its typical features well marked. He details seven cases, and refers to six others that were similar. The elephantatic leg is in three of his cases not the seat of any kind of ulcer. The enlargement is rarely very considerable, though one of his cases dated back for thirty years. He finds that at times the enlarged limb becomes acutely inflamed in association with systemic febrile disturbance, the socalled elephantoid fever, on subsidence of which the part is increased in size. He considers the cause of the enlargement to be obstruction of the main lymphatic trunks by a specific endolymphangitis, the result of which will be lymph stasis in distal parts and overgrowth of the fibrous tissue in these regions.

Pringle (13) mentions a case of syphilitic elephantiasis of one arm which had no visible surface lesion. Adamson (14) cites a case of a woman aged thirty-six with enormous enlargement of both legs and feet, who had many scars and the skin lesions of tertiary syphilis on her legs. The Wassermann test was positive. P. W. Howle (15) describes a case of a negress with marked enlargement of both labia, which hung down to the knees, and which ulcerated and discharged lymph. The blood showed no microfilaria, and the Wassermann was positive. The tumors were excised, but at the end of a week there was general lymph edema and profuse lymphorrhea, with every indication of a rapid return of the condition. Two doses of salvarsan, two weeks apart, were given, with marked improvement after the first and prompt disappearance of the edema after the second. Heidingfeld declares that syphilitic cases of elephantiasis of genitals respond well to salvarsan with recession of the elephantiasis. McDonagh reports a case of enlargement of scrotum in a man who had had at various times syphilides of the palm, of the wrist, of the scrotum, and of the buttocks. This patient had a positive Wassermann. After thirteen injections of grey oil the scrotum was reduced to half its former size.

Pathologically, in this last case McDonagh found the condition microscopically to consist of new formed connective tissue cells in the corium and in the deeper layers. There were wide lymphatic spaces lined with a single layer of epithelium with perilymphatic infiltration of small round cells—lymph and a few plasma cells. He called it a syphilitic lymphangitis. Howle (15), in his case, found the labial growths to consist of fibrous connective tissue showing an extreme condition of edema. There were small perivascular collections of round cells around the blood and lymph vessels. Adamson (14) from his biopsy found a dense feltwork of fibrous tissue made up of fine fibrils with abundant connective tissue cells, numerous plasma cells, and many pigment cells scattered around the fibrous bundles. There were collections of round cells and plasma cells around the bloodvessels, and here and there dilated lymphatics. He asserts, however, that the large number of plasma cells did not necessarily suggest a local reaction of syphilitic origin, because this was also seen in elephantiasis unassociated with syphilis.

Case I.—C. E. (Medical B 16314, St. Luke's O. P. D.), white, male, married, aged thirty-four, electrician, was admitted June 30, 1919, complaining of swelling of the left leg, of two years' duration.

Family history.—His first wife died four years ago with tuberculous peritonitis starting in the pelvis, as discovered at operation. She had had one child born dead and a second child who died at one month with an enlarged liver. His second wife was well, had borne one child, now eighteen months old and quite well. This wife had a negative Wassermann reaction.

Past history.—He had always lived in New York. When a child he had pneumonia. At twenty-two he had urethritis, which was treated and which had no sequelæ. He has had no chancre. In general his health had always been good, with no symptoms referable to pulmonary, cardiovascular, renal, or gastrointestinal systems, save moderate constipation.

Present history.—Two years ago he noticed slight swelling of his left ankle at night, generally gone by morning. This swelling gradually increased in extent and in permanence until it was constant and reached to within an inch of the knee. He never noted any lumps or localized thickenings, and never had pain. For the past year and a half he had had a superficial skin lesion on the sole of the left foot. His right leg had never been affected. His health otherwise was excellent; he had at no time been incapacitated.

Physical examination.—Revealed a well developed and well nourished man who appeared in good health. The extrinsic and intrinsic muscles of the eyes functioned normally. The nose and throat were negative. The teeth were poorly kept. No lymph nodes were palpable. The heart and lungs were normal. The abdomen was soft, liver and spleen were not palpable, and there were no palpable masses. The genitalia were negative. The rectal examination was negative. The right leg was normal. The left leg showed enlargement from foot to knee. The skin was diffusely and distinctly thickened, and did not slide on the underlying tissues. The thickening was uniform, so that the normal proportions between the calf and ankle were altered, and the leg looked gross. There was no tenderness and no pitting on pressure. There was no change in the color or the temperature or smoothness or the hairiness of the skin. On the left foot a sharply defined, serpiginous, red, scaly lesion was present, covering the entire plantar surface. The fundi showed chorioretinitis, marked in the right eye, slight in the left. The white blood cells numbered 8,000, of which seventy-two per cent. were polymorphonuclear neutrophiles, twenty-eight per cent. lymphocytes. Urinalysis was negative. The Wassermann reaction of the serum was positive.

The patient was admitted to the hospital, to the service of Dr. Samuel W. Lambert, where a nocturnal search for microfilaria was negative. Lumbar puncture gave a clear fluid under no increased pressure, with no increased globulin, with eight cells, with a negative Wassermann reaction, and a flat colloidal gold curve.

The patient was then given antisyphilitic treatment. Because of the exigencies of his private affairs, there was no very definite scheme followed. He was given mercury and potassium iodide by mouth, mercuric chloride by intramuscular injection, and neoarsphenamine intravenously. At the end of a month, with mixed treatment by mouth, three injections of mercury, and two of neoarsphenamine, the syphilide on the sole of the foot of eighteen months' standing was entirely gone. The thickening of the leg gradually diminished, the skin in the upper part first began to pit on pressure, and then became of normal thickness and consistency and could be made to glide over the tissues underlying. Now at the end of seven months of treatment, with eight injections of neoarsphenamine and ten of mercury, the upper two thirds of the leg was of the same size as its fellow but pitted slightly on pressure; in the lower third still affected, the thickening was greatly diminished in size and pitted readily on pressure. With the continuance of treatment the prospects of complete cure seem excellent.

CASE II.—S. M. (Medical B, 16700, St. Luke's O. P. D.), negro, aged thirty-three, married, porter, was admitted September 9, 1919, complaining of pain in the left leg, knee, and thigh.

Family history.—His wife, who herself was well, had had one miscarriage and no other pregnancies.

Past history.—He had been in good health and had no illness except for a urethritis for six months fifteen years ago, and for a chancre at about the same time which received no treatment. He came to this country two years ago from the island of Trinidad.

Present history.—Two months ago he began to have pain, referred to left lower lumbosacral region; also to the left leg on the mesial aspect, radiating to the thigh. The pain in the leg was present all the time but eased up at night. He had lost about ten pounds in the past two months. He had had no symptoms referable to the cardiovascular, pulmonary, renal, gastrointestinal, or genitourinary systems.

Physical examination.—The patient was a well-developed, fairly wellnourished negro who did not appear ill. Examination was negative except for dental caries and enlargement of lymph nodes in the posterior cervical, epitrochlear, and inguinal regions, most marked in the left inguinal. The left leg showed a swelling, diffuse from ankle to knee with pitting edema. There was a slight tenderness over the posterior aspect of the leg. There were no palpable veins. The skin was normal except for the edema. The right leg was normal in all respects.

Röntgen ray examination revealed no bony or periosteal changes. The Wassermann reaction of the serum was four plus.

In the course of treatment the pain promptly receded and the swelling of the leg slowly diminished. In two months there was very little edema left. At the end of four months the patient said there was no noticeable difference between the two legs though he had discontinued treatment for six weeks. His leg then began to swell slightly in the course of ten days when he again reported for treatment. There was then 2.5 cm. difference between the circumferences of the two calves.

CASE III. — L. C. (Medical B, 9559 St. Luke's O. P. D.), negress, aged twenty-three, married, housewife, came in complaining of swelling of leg. For nine months she noticed that the left leg would swell during the day but that the swelling would disappear during the night. There never was any pain until the day of her admission. She was married two years and had one miscarriage, twins, at six months, a year ago. She came from Georgetown, British Guiana, two and a half years ago and had always had good health. Physical examination showed nothing abnormal except swelling of foot, ankle, and leg up to the knee. The swelling was slight, pitted but was not tender. The Wassermann reaction of the serum was four plus. The patient was admitted to the wards of Dr. Lambert and examination of nocturnal specimens of blood made for microfilaria, but none were present. The patient at first refused to undergo antisyphilitic treatment, but had lately consented.

COMMENT.

These three cases of unilateral enlargement of a leg showed a history and evidence of syphilis. In the first of these cases the enlargement was of two years' standing and was accompanied by a nonpitting thickening of the skin: it could definitely be called elephantiasis. The latter two cases of shorter duration might be regarded as early examples of the same condition. The two patients examined for microfilaria showed none. Of the two patients undergoing antisyphilitic treatment, the slow but marked improvement would make one anticipate the ultimate cure as certain. It is to be regretted that no biopsy was attempted, although it was contemplated. A fairly comprehensive examination of the English and American literature has brought forth several cases of elephantiasis reported as due to syphilis and in very few of these are the results of purely antisyphilitic treatment given.

CONCLUSIONS.

1. Direct evidence of the filarial origin of elephantiasis has never been fully demonstrated.

2. Three cases are presented of unilateral enlargement of a limb due to syphilis. One case quite definitely and two cases very suggestively resemble elephantiasis, the pathological lesion of

which is probably an endolymphangitis. The two cases treated responded to the therapeutic test, though not yet completely cured.

3. It is suggested that all cases of elephantiasis be exhaustively examined for evidence of syphilis, and that intensive antisyphilitic treatment be tried. This is especially desirable because of the otherwise almost hopeless prognosis.

REFERENCES.

1. Matas, R.: Surgical Treatment of Elephantiasis and Elephantoid States Dependent upon Chronic Obstruction of the Lymphatic and Venous Channels, *American Journal of Tropical Diseases and Preventive Medicine*, July, 1913, vol. i, p. 60.
2. *Idem:* Remarks on Elephantiasis in the South, *Transactions Southern Surgical and Gynecological Association*, 1911, p. 426.
3. Prout, W. T.: On the Rôle of Filaria in the Production of Disease, *Journal of Tropical Medicine and Hygiene*, 1908, vol. xi, 109.
4. *Idem:* Discussion of Elephantiasis, *British Medical Journal*, 1908, iii, 1363.
5. Johnson, F. B.: Filarial Infection: An Investigation of Its Prevalence in Charleston, S. C., *Southern Medical Journal*, 1915, viii, 630.
6. Manson, P.: *Tropical Diseases*, New York, William Wood & Co., 1914, p. 693.
7. Wellman, F. C.: On the Etiology of Elephantiasis Arabum, *Journal of Tropical Medicine and Hygiene*, 1908, xi, 118.
8. Manson, P.: *Filaria Sanguinis Hominis*, London, 1883, p. 80.
9. Stitt, E. R.: *Diagnosis and Treatment of Tropical Diseases*, Philadelphia, 1917, second edition, p. 314.
10. Webb, A.: Elephantiasis Orientalis, *Indian Annals of Medical Science*, 1855, iv, 619.
11. Klotz: Elephantiasis, New York Medical Journal, 1880, xxxi, 306.
12. Frances, A. G.: Cases of Elephantiasis Associated with Tertiary Syphilis, *British Journal of Dermatology*, 1894, vi, 225.
13. Pringle: Case of Syphilitic Elephantiasis of Arm, *British Journal of Dermatology*, 1910, xxii, 163.
14. Adamson: Elephantiasis Associated with Tertiary Syphilis, *British Journal of Dermatology*, 1910, xxii, 161.
15. Howle, P. W.: Report of a Case Simulating Elephantiasis, *Journal A. M. A.*, 1914, lxiii, Part I, p. 548.
16. Heidingsfeld, M. L.: Elephantiasis Cutis Penis, *American Journal of Urology*, 1912, viii, 263.
17. McDonagh: Case of Syphilitic Elephantiasis of Scrotum, *British Journal of Dermatology*, 1912, xxiv, 24.

124 West Eighty-seventh Street.

The Pathology of Socalled Sprains of the Wrist

With a Note on Skiagrams in These Conditions

By EDGAR F. CYRIAX, M. D. (Edin.),
London,
and
By STANLEY MELVILLE, M. D.,
London.

In 1917 (1) I presented a communication on the pathology of socalled sprains of the foot when uncomplicated by fracture, in which I endeavored to show that the ligamentous overextension, with partial or complete rupture, was often accompanied by minor displacements (commonly called subluxations) of bones, and that this of necessity involved cartilaginous displacements either as regards one or both bones between which such cartilages lay. The same holds good for the wrist joint, and as these are facts not usually recognized, I feel that a few words upon the subject will not be out of place.

The reason why such displacements occur is not difficult to seek. Before a ligament can be overstretched, the bones to which it is attached must be separated to an extent greater than the normal physiological maximum and must remain fixed in that position during the time that the ligamentous overextension occurs. The muscular contraction that thus fixed them persists in consequence of the irritation caused by the overextension; effusion and adhesions easily result, and thus the displaced bones are never able to regain their correct position.

In sprains of the wrist the following subluxations of bones may occur in the carpus or its immediate neighborhood:

a. Scaphoid and semilunar on the radius, by far the commonest kind. They are nearly always displaced together, either internally or by being tilted; external displacements are rare.

b. Radius and ulna on one another as the result of oversupination and overgliding, so that the lower end of the radius comes to lie too posteriorly as regards the lower end of the ulna.

c. Os magnum on its adjacent bones; it is generally displaced posteriorly.

d. Other carpal bones on one another; the displacements may be in various directions.

e. Metacarpals on the distal row of carpals; the displacement is nearly always posterior and may involve only one or several of the bones in question (2).

The diagnosis of the above mentioned displacements is often a matter of difficulty as regards the carpal bones, though generally easy as regards the radius and ulna and the metacarpals and carpus. The following symptoms are of value in confirming what inspection and palpation have brought to light:

a. Attempts to increase the amount of displacement also increase any existing pain or discomfort; attempts to move the bones in the opposite direction diminish the same.

b. Exercising pressure or traction (3) so as to open out the suspected joints generally alleviates any existing pain or discomfort, whereas attempts to compress the joint has the opposite effect. The amount of separation of bony surfaces that can be obtained by means of traction is greater than is generally supposed.

c. The performance of passive movements involving subluxated joints is generally accompanied by abnormal grating sounds; these are quite unlike, but may be combined with somewhat similar sounds due to synovial friction.

d. Sudden locking of the wrist with acute pain.

The use of the x rays is in many cases desirable in clearing up the diagnosis, and views should always be taken of both wrists, as it is frequently only by careful comparison of the two that an accurate diagnosis can be made.

I must here make a few remarks about diagnostic movements as mentioned under c. Apart from flexion, extension, ulnar and radial flexion, pronation and supination, certain other movements which cannot be performed actively can be used. They are as follows:

a. Gliding movements of the radius on the ulna in the anterioposterior plane of the forearm. The patient's forearm having been placed in complete pronation, the operator grasps the radius and ulna at their lower ends with the thumb and fingers of each hand respectively. The bones can then be moved alternately backward and forward on one another.

b. Rotation of the wrist (4). With the forearm as before, the operator fixes its lower end with his one hand, and grasps the metacarpus with the other. Passive rotation of the wrist can then be obtained by rotating the hand *en masse* alternately in opposite directions.

c. Lateral gliding movements of the proximal row of carpals on the radius and the two rows on one another. With the same grasp as in b the operator moves the hand *en masse* alternately to the radial and ulnar sides.

d. Anterioposterior gliding movements of the carpals on one another. With the same grasp as in b the hand can be moved *en masse* alternately backward and forward.

e. Anterioposterior gliding movements of the metacarpals on the distal row of carpal bones. With the same grasp as in b, except that the hand that fixes the forearm also fixes the wrist, the hand can be moved *en masse* alternately backward and forward.

The recognition of the above mentioned subluxations is of course of paramount importance from the treatment point of view, as the reposition of such displacements is a *sine qua non* for complete and permanent cure. It is obvious, if such displacements exist, that to prescribe massage pure and simple—a method of treatment frequently advocated—will be no more than a palliative, except in the rare event of its causing absorption of effusion and removal of adhesions to sufficient extent to allow of spontaneous replacement.

As regards the technic of the actual reposition, the same rules hold good as for major displacements, namely:

a. The forearm and hand should be placed in the position that affords the greatest degree of relaxation.

b. The muscles and ligaments in the neighborhood of the displacement should be relaxed by means of vibrations, light petrissage and small passive movements of the joints.

c. The actual reposition should then be performed (if possible) during the application of traction (5) by means of small and sudden movements; in their performance persuasion is always better than violence. It is not essential, as is frequently supposed, to perform the reposition in its entirety at one and the same sitting; it is often better, especially in the cases of long standing, to do it bit by bit, taking several days. The more gently reposition is effected the less the danger of the inflammation that so rapidly results when large numbers of adhesions are broken down or when sudden changes of position are brought about as regards the relative positions of the subluxated bones.

I give herewith the notes of an illustrative case: A woman, aged fifty-two, came to me on November 7, 1919, suffering from the results of a fall on the hand about twenty-two years previously. She fell with the hand dorsiflexed, and ever since had had pain and swelling over the front of the wrist, with impairment of flexion and greatly diminished power of grasping and supination. The seat of the injury was just below the lower end of the radius. A skiagram, kindly taken by Dr. S. Melville, showed a tilt of the scaphoid so that its lower surface formed an angle of about 70° with the long axis of the radius as compared with 86° on the healthy side. (Fig. 1.) At the first visit a number of adhesions were broken down and the bone moved into slightly better position. The same occurred at the next three sittings, at the conclusion of which the bone had moved into its original correct position. Not the slightest pain was inflicted on any occasion. After reposition there was no limitation of movement and no pain on any of them. Five more sittings were spent in applying movements to strengthen the muscles which had become weakened. At their conclusion the muscles of the affected wrist were if anything stronger than those on the opposite (healthy) side.

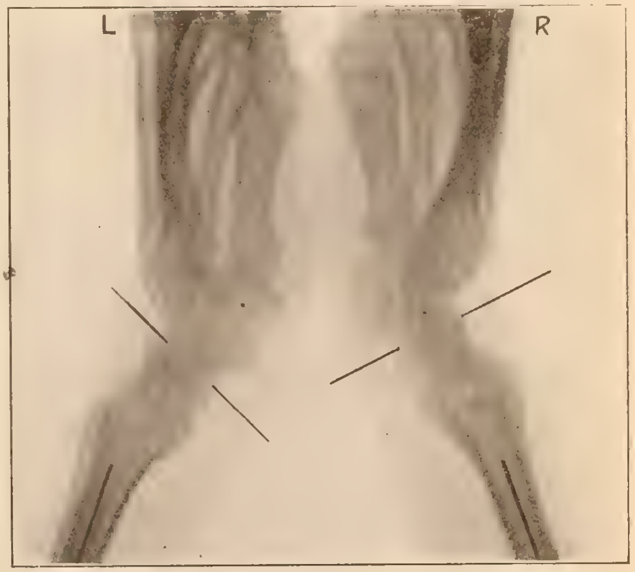


Fig. 1.—Skiagram showing tilt of the scaphoid, its lower surface formed at an angle of 70° with the long axis of the radius. The normal being 86°.

SKIAGRAMS IN SOCALLED SPRAINS OF THE WRIST.

BY STANLEY MELVILLE.

The term sprained wrist is very comprehensive, covering many frequently unrecognized injuries. Up to comparatively recent times textbooks on surgery regarded fractures and subluxations of the carpal bones as being accidents of extreme rarity; surgeons of the highest repute were inclined to pass over even fractures of carpal bones as unworthy of notice, dismissing them with the comment that, even if they did occur, they demanded very little surgical interference and healed with hardly any deformity and complete recovery of function. Fortunately, this is not the attitude of today, and cases of sprained wrist are frequently found to be the seat of fracture or subluxation of carpal bones, which, if untreated, result in great functional disability.

From the anatomical aspect, the fact that the intermobility of the proximal row of the carpal bones is much greater than that of the distal is the reason why subluxations are much more frequent in the former. It is an easy matter to test this difference in range of movement by looking at the hand in the lateral plane during full flexion and extension of the wrist. The reason why most subluxations occur in a backward direction lies in the fact that the anterior ligaments possess much greater strength than the posterior ones.

The os magnum, forming as it were the centre of movement of the joint, is not infrequently the seat of a posterior displacement. The scaphoid and semilunar are often subluxated together in the same direction, while all varieties of subluxation are met with as complications of fractures of the lower end of the radius. The semilunar may be subluxated alone, generally as the result of trauma when the hand was in full flexion, and this has in some cases led to the erroneous diagnosis of Colles's fracture. The bone is usually displaced backwards, and, being held in position by its attachments to the radius, rotates and slips behind the os magnum, its concave surface thus coming to point forward.

The greatest care should be taken to skiagraph both the affected and the sound wrist under precisely similar conditions, and to insure that the skiagrams are taken in both posterioanterior and lateral planes. The best positions are: 1. For the posterioanterior plane, both hands are to be held prone, the plate placed on their dorsal aspect and the tube beneath them. 2. For the lateral plane, both hands are to be held in the semiprone position with the palms together, the plate placed on their radial side and the tube as in the first position.

REFERENCES.

1. CYRIAX, EDGAR F.: Pathology of Sprains of Foot, *Edinburgh Medical Journal*, 1917, vol. xviii (New Series), pp. 196-200.
2. *Ibid:* Report of a Case in Which One Metacarpal was Displaced, *Practitioner*, 1918, C. p. 494.
3. *Ibid:* Skiagrams of Wrist Under Normal Conditions and During Passive Elongation, *Medical Press and Circular*, 1918 (New Series), cv, 370-372.
4. *Ibid: Journal of Anatomy*, 1917, li, 396-399.

Lesion of the Occipital Lobe Simulating Cerebellar Involvement*

By ALFRED GORDON, M. D.,
Philadelphia.

In a contribution published in 1917 (1) I presented anatomicoclinical data of four personal cases in which lesions of the frontal lobe produced cerebellar manifestations. I also called attention to a large number of cases in the literature showing a great variety of cerebral lesions presenting cerebellar symptoms *ad vitam*. There were cases of infantile hemiplegia, tumors of the parietal lobe, lesions of the thalamus opticus. In some of these cases the cerebellar manifestations were so predominant or so conspicuous that diagnoses of cerebellar lesions were firmly made and operative procedures over the cerebellar area were undertaken. Autopsies in such cases proved wrong localizations: the lesions (tumors, etc.) were found, not in the cerebellum, but in the cerebrum. It suffices to mention the cases of Hitzig (2), of Labbé (3), of Lépine (4), of Fishelberg, Patel, Mayet and Ballet (5).

The existence of cerebellar symptoms in lesions of the cerebrum finds its explanation in the anatomical arrangement of various neurone structures. In the above mentioned contribution concerning lesions of the frontal lobe anatomical data were presented to that effect. Following Mingazzini, Flechsig, Von Monakow, and others, we admit that frontocerebellar pathways run through the anterior segment of the internal capsule, of which they constitute about one half; then they descend, and after forming one fifth of the foot of the cerebral peduncle they surround the anteropyramidal and retropyramidal groups of fibres, cross at the level of the posterior extremity of the pons, and enter the middle cerebellar peduncle on the opposite side. It is therefore manifest that even a limited process in the cerebrum, suppressing its activity, will at the same time interfere with the function of the fibres emanating from the lesion, exert its morbid influence at a distance, and produce cerebellar disturbances.

The evidence presented here tend to show that cases with cerebellar manifestations, among other symptoms, do not necessarily imply a diagnosis of a lesion in the cerebellum. Failure of recognizing this truth may lead to disastrous results when the problem of surgical intervention is to be acted upon, as the cases mentioned above testify. In all such cases it must be borne in mind that lesions at a distance are capable of disturbing the function of the cerebellum through associating pathways and subjacent nuclei. Since in all such cases in addition to cerebellar manifestations there will be those depending upon the disturbed function of the areas directly connected with the given cerebral lesion, it is of utmost importance to subject such complex cases to a detailed analysis and to practise the most careful discrimination of symptoms referable to the cerebellum and those dependent on other structures.

---

*Case reported before the Philadelphia Neurological Society, February 25, 1921.

Not only actual lesions (tumors, etc.) of the cerebrum at a distance are likely to disturb the function of the cerebellum through the injury of the fibres emanating from the lesion, but also direct pressure on the cerebellum from a lesion in the vicinity without an actual anatomical involvement of the cerebellum. Here again a cautious analysis of all the symptoms, with a careful consideration of the function of the parts upon which the symptoms depend, is necessary for a proper diagnosis and exact localization of the lesion. The case reported below presented some evidences of a cerebellar character, and the diagnosis was somewhat hesitating and obscure, but repeated investigations of all gross and minute symptoms led to a proper discrimination and a correct opinion as to the lesion and its localization.

CASE.—F. T., male, aged thirty-six, born in Italy, a veteran of the last war, was injured during the war in the right arm and stabbed in the left hypochondriac region posteriorly. He recovered from those wounds. In October, 1920, severe headache developed over the temporofrontal region on both sides. At first the headache was intermittent, but of late had become persistent and unusually severe. The pain soon extended to the left auricular region. During the past two months he had had frequent attacks of dizziness, followed by fainting spells, which occurred two or three times a day. He had had also frequent attacks of vomiting, especially in the morning.

An objective examination revealed the following condition: There was distinct but not very pronounced weakness on the right side. He performed movements with his right arm and leg more sluggishly than with the left extremities. The knee jerk, flexor and extensor reflexes of the right arm were somewhat more marked on the right side than on the left. There was no ankle clonus, no Babinski on either side, but there was a distinct and easily obtainable paradoxical reflex on the right side. When the left side was tested for the latter reflex, a contralateral extension of the right great toe was evident. The absence of the Babinski's sign and the presence of the paradoxical sign had been manifest from the beginning of his malady, before as well as after the operation. The abdominal and cremasteric reflexes were exceedingly slight and sometimes not at all obtainable on the right side, while they were distinct on the left side. The patient's gait was uncertain; there was some asynergia, as the trunk did not altogether follow the legs; the patient did not hold himself erect in walking, he swayed somewhat from side to side, and was unable to stand on either foot. Adiadochokinesia was not present. There was no ataxia of the upper extremities, either in the finger to nose movement or in the pastpointing test. There was only a sluggishness in the movements of the right arm.

Test for sensations revealed the presence of all forms, but they were somewhat increased in the right arm and leg, particularly with regard to pain. The deep sensibilities were all intact. Astereognosis was not present in the right hand or foot. The eye examination showed slightly unequal pupils, right four mm., left three mm.; eyegrounds were normal. There was a distinct right lateral homonymous hemianopsia, which had existed from the onset of the disease. Examination of the blood and spinal fluid on repeated tests gave a negative Wassermann. X ray examination of the skull was negative. Urinalysis was negative, with the exception of occasional traces of albumin and hyaline casts. Blood examination showed: Hemoglobin, seventy-five per cent.; red cells, 3,190,000; white cells, 17,000; blood area, 1.25; blood area nitrogen, .011. A Bárány test (Dr. Fisher) gave variable and consequently no definite data to form an opinion as to the localization of the lesion. The patient presented no previous special medical history with the exception of the above mentioned injury during the war.

To sum up, the patient presented a mild hemiparesis on the right side, with hyperalgesia on the same side, also right lateral homonymous hemianopsia. The paresis was of organic nature in spite of a persistent absence of Babinski's sign. These facts, and particularly the hemianopsia, led me to conclude that the lesion was probably in the left hemisphere and in its optic radiations. The lesion produced pressure or irritation forward on the posterior limb of the internal capsule, irritating its sensory and motor portions, thus producing the hyperalgesia and the weakness on the right side, also the paradoxical reflex with a somewhat increased patellar tendon reflex. In view of the history of headache of unusual severity, also of dizziness and vomiting, the presumption was in favor of a neoplasm in the area mentioned above. An operation by Dr. Behrend over the occipital lobes revealed an abscess in the left occipital lobe, involving the entire lobe.

The case is interesting from the following viewpoints: The presence of hemianopsia which, more than anything else, led to a correct localization of the lesion. The persistence of the paradoxical reflex at the persistent exclusion of the Babinski's sign. The association of the paradoxical reflex with an increased knee jerk and a paresis on the right side. The presence of hemihyperalgesia showing irritation of the *carrefour sensitif* of Charcot.

The right sided symptoms were of an irritative rather than a destructive character. In the latter case the result would have been complete hemiplegia with hemianesthesia and a distinct Babinski reflex. The few cerebellar manifestations, such as the asynergia, the oscillations of the body from side to side while walking, can be explained by the pressure exercised upon the cerebellum from the above situated abscess. A lesion, therefore, of the occipital lobe may simulate a cerebellar disease, thus making the localizing diagnosis difficult.

REFERENCES.

1. GORDON: *Journal of Nervous and Mental Diseases*, vol. xlvii, No. 4, October, 1917.
2. HITZIG: *Therapeutische Wochenschrift*, 1896.
3. LABBÉ: *Bull. Soc. Anatom.*, 1896, p. 702.
4. LÉPINE: *Revue Neurologique*, 1896, p. 13.
5. DURET: *Tumeurs de l'Encéphale.*

Editorial Articles

THE INFLUENCE OF SMOKE ABATEMENT UPON TUBERCULOSIS

It is a well established fact that sunlight is the most potent enemy of the tubercle bacillus. Moreover, it is also well known that the presence of dust or dirt in the air, smoke dust, for example, is detrimental to the sufferer from tuberculosis for obvious reasons. Light is not only destructive to the tubercle bacilli, but invigorates the system and enables one better to withstand the onslaughts of most diseases, and those of bacterial origin in particular. Accordingly the action of sunlight is two fold and of inestimable value in one way or the other. These facts then bring us to the point the influence of smoke abatement upon tuberculosis. In the *Sunday Observer* published in London, there is a weekly letter from a medical correspondent. In the issue of January 23, 1921, this correspondent in discussing the evil influence of a smoky atmosphere upon tuberculosis, declares that the principles evolved by Koch have been marvellously applied in New York. That is by abolishing the smoke nuisance the New York Board of Health has made of the city a city of light and this immensely increased the chances for recovery of the tuberculous. The law for the abolition of smoke in New York came into effect in 1905 and it is stated that the results have been almost magical. The figures given in support of this statement are as follows. At about the beginning of the century pulmonary tuberculosis killed thirty-nine per ten thousand per annum in New York: in 1919 it killed thirteen. This signifies that in twenty years or thereabouts, the death rate from this disease has been reduced to one third of its former proportion.

It is argued that if measures for smoke abatement brought about this great change for the better in New York, similar measures would accomplish even more in London, where conditions with regard to smoke and dirt are infinitely worse. Pittsburgh has been cleaned, largely by means of smoke abatement measures, and there seems to be a consensus of opinion that the cleaner the air of a place is, the better it is for people suffering from bronchial and other respiratory affections, and perhaps especially for those afflicted with the pulmonary form of tuberculosis. But that a clear atmosphere is beneficial to health is obvious to all, and no longer should a smoke laden air be permitted in a civilized country. Why not have unpolluted air as well as unpolluted water? A comparatively pure water supply has resulted almost in the abolition of some epidemic diseases and it is reasonable to suppose that a comparatively pure air might in course of time abolish certain other diseases. In any event, such an air is healthier and more pleasant by far and, moreover, is not very difficult of attainment.

A NEW THEORY OF MALIGNANCY

The latest source of an explanation, or an attempt at explanation, of the causes of malignant growths comes, not very strangely in the present state of society, from a student of sociology and, for thirty years, a writer of fiction. That Morley Roberts carries a card of introduction to the scientific world bearing the name of Professor Arthur Keith is sufficient for him to have a most respectful hearing. In his studies, for literary purposes, of the phenomena of human nature, Roberts has consulted some of the foremost English scientists, and the likeness in behavior between the personal units of society and the cellular units of the body, which these consultations have suggested, has led him to his present physiological and pathological generalizations. Doubtless the recent malignant outbreaks in society have helped to confirm him in his theories.

Roberts looks upon the human body "as a federation of organs and tissues, living in symbiosis, and yet fundamentally hostile or selfish, . . . Every portion of the whole body influences every other part either for good or for evil. . . Every cell influences every other cell and those in immense majority have much power. . . Each tissue must have its own specialized secretion which it throws into the blood and which exerts itself everywhere. . . . Order does not exist without control and the essence of malignancy is lack of control."

"There is reason to suppose," Roberts argues, "that epithelium and connective tissue influence and control each other, and the age incidence of sarcoma and carcinoma suggest that these tissues inhibit each other's undue growth." "Their failure to control each other is the real cause of malignancy and the essence of the cancer problem." X ray dermatitis, the effects of infection or other profound irritation may upset the balanced relationship between the two and produce "tissue instability." There is, therefore, no invariable single antecedent to malignancy; there are many, of which the x ray is a definitely known one.

The powerful effect of what Bland-Sutton calls the "glandular pantheon of the endocrines," and their undoubted supervising influence upon growth, as well as upon general tissue behavior, suggest that a morbid condition of these glands may be often at the bottom of the unbalancing of tissue equilibrium and the production of a state of malignancy. Roberts thinks that our present knowledge of these organs points to the pituitary as having most to do with the condition. He recommends that research be directed to the discovery of the "tissue products or secretions by which epithelium and connective tissue preserve their individuality and prevent reversion to each other."

It was Napoleon, who, in an age when science bled his wounded soldiers, declared that such practice was vicious, in that it meant the withdrawal of so much of the body's resources for healing. Thoughtful suggestion to twentieth century scientists by a novelist should receive more consideration than was accorded the hint of the keen minded military genius of a century since. Certainly this theory is in line with advance in physiology and causes some of the older and narrower conceptions to assume a dubious value.

PHYSICIAN AUTHORS: DR. ROBERT SEYMOUR BRIDGES

England's present Poet Laureate, Robert Seymour Bridges, is a member of the medical profession, and gained a distinguished place for himself before he gave it up (in 1882) to devote himself to writing. Although he had been educated aristocratically at Eton and Oxford, this member of a distinguished English family chose to become a physician, and for several years was connected with three London hospitals, besides doing a general practice. After leaving Oxford he traveled extensively on the continent and in the Far East, and on his return to London became a medical student at St. Bartholomew's Hospital, receiving in due course his M. D. degree. He then became regularly attached to the staff of St. Bartholomew's as casualty physician, and also served as assistant physician at the London Children's Hospital. Incidentally, the diseases of childhood were his specialty. It is said that he often expressed a preference for treating children rather than treating adults, for two reasons. First, children did not tell him untruths about their symptoms and, second, they invariably had to take the remedies he prescribed for them. He was extremely fond of children and some of his most beautiful poems have been inspired by them. Many of these poems bear the stamp of his medical work among the little sufferers whom he had to treat. Dr. Bridges also was physician at the Great Northern Hospital, in London, for a number of years, but being possessed of private means he retired when he was thirty-eight years old, married and left London for his beautiful rural estate at Yattenden in Berkshire. Since that time he has devoted himself exclusively to literature, and particularly to poetry.

Bridges was born on October 23, 1844, on the Isle of Thanet at the mouth of the River Thames. Beyond that and a few other dates and facts of his life, there is little of a biographical nature to be told about him. It is remarkable the extent to which this man, occupying the highest literary position (official) in England and the only official position of its kind in the world, has managed to keep himself out of the limelight. He is a shy, retiring man, unassuming and without literary pose, and with a great distaste for publicity. When Premier Asquith appointed him Laureate (on July 16, 1913), in succession to Alfred Austin, he was an obscure man of whom very few people in England had heard and still fewer in America, and this included even those people who are enthusiastic readers of verse. The Laureateship brought him a few hours of prominence which evidently were not much to his liking. "I cannot understand this mad rush for publicity," he said when a swarm of reporters besieged him. "It seems to me a surrender of the real for the artificial and the degradation of art." But even the Laureateship has failed to keep him in the public eye. He is almost as obscure as he was before the honor was conferred on him and few outside the literati are familiar with his work.

The appointment of Dr. Bridges to the Laureateship was a keen disappointment in many quarters. Those who had advanced the claims of Kipling, Masefield, Alfred Noyes and others were quick to brand Dr. Bridges an old fogy in the matter of poetry, because of his fondness for archaic phrases and themes and his adoption of a peculiar metrical theory which makes his verses seem clumsy. To the minds of these disparagers, poetry, like all other things in this age, must be progressive and leave off singing of Arcady and pretty, outworn loves. Thus they charged him with being unoriginal and out of date, a backward looking man who sought inspiration from the ancients instead of being one who got his inspiration from the facts of life as they exist today. Even Dr. Bridges's admirers are forced to admit that his poems, by their very nature, are shut out from the possibility of wide popularity. In a sympathetic essay in the *Monthly Review* (July 1901) Arthur Symons says: "Dr. Bridges's style in verse has been said to lack originality, and it is true that his finest lyrics might have found their place among the lyrics in an Elizabethan song book."

Dr. Bridges has to his credit a large body of lyrics, including some three score sonnets in sequence, called *The Growth of Love,* a long poetical version of *Eros and Psyche,* several librettos for oratorios, a masque, eight or ten poetical dramas in various manners—experiments in classical meters—an essay on Keats and a study of Milton's poetry. Since he became Laureate his chief published work has been *The Spirit of Man: An Anthology in English and French,* with selections from the philosophers and poets. The first fruit of his appointment was his poem, *Christmas Eve, Pax Hominibus Bonae Voluntatis,* by means of which he revived an ancient custom and, like some remote predecessor, assumed the function of Versificator Regis, thereby availing himself of the right to address the sovereign not only on State occasions, but also at the time of a Christian festival.

This was, perhaps, another evidence of old fogeyism, but however much Bridges's style and thought may be passed, he stands deeply rooted in the great tradition and the genuineness of his poetic feeling cannot be gainsaid. Besides, he perpetuates some of the finest English associations, especially of country life, which he sees full of warmth and color. In spite of the preponderance of dramatic form in his work, he is essentially a lyric poet, showing in this capacity the natural instinct and finish of a Jacobean. Cold and formal his style may be and lacking in outcries of passion and all excitement, but he has a notable strength of expression coupled with purity, precision and delicacy. And he has, too, the courage of his convictions. Since coming into the Laureateship he has been the Bridges that he was of yore, content to be simply himself. During the World War he found some little inspiration in current events, but not a great deal, and if he has written anything since the war, the element of timeliness has been so lacking in it that we on this side of the Atlantic haven't heard of it—or have forgotten if we did.

THERMOMETERS OLD AND NEW

That the ordinary thermometer furnishes little information regarding the condition of the atmosphere as affecting comfort and health—in other words, as conducing to loss of body heat or its retention, was recognized a hundred years ago; and not by a professional sanitarian but by a physician, the distinguished Dr. Heberden. The ordinary thermometer measures the heat of the air and of surrounding inanimate things, but it gives no knowledge of the amount of moisture in the air nor of the degree of movement of the air, both of which are of the utmost importance with reference to human health and comfort.

Heberden, perceiving that the human body is a dynamic structure constantly losing heat, and affected in its loss by atmospheric states other than temperature, tried the very simple experiment of heating a common thermometer up to 150°F., carrying it into the open, and noting the number of degrees the mercury fell (after it had reached 100°F.) in a given time. In the first experiment the ordinary thermometer read 31°F. and there was a strong breeze blowing, in the second the temperature of the air was 30°F. with no perceptible wind. In the first the heated mercury fell forty-eight degrees in thirty seconds. Under the conditions of the second experiment it fell only twenty-nine degrees. The difference in rapidity of radiation and conduction from the heated bulb was due almost entirely to the movement of the air. The same effect was, of course, produced at higher temperatures of the air. Heberden did not take into account the effect of atmospheric moisture upon our heat loss, but the experiment and the thought back of it were most significant. Neither the idea, the proof of the idea, nor the importance of other atmospheric influences than temperature affecting the body for ill or good made much impression upon contemporary minds and it was not until a very few years ago that a physiologist, Leonard Hill, was likewise struck with the almost uselessness of the ordinary thermometer for purposes of testing air conditions, or for conditioning the air for body comfort and for most effective work.

The wet bulb thermometer had come into existence and gave most important information as to the humidity of the air, in fact is now recognized as far more useful than the dry bulb instrument. Hill hit upon the idea of heating both a wet and a dry large bulbed thermometer and noting the speed of fall under various atmospheric conditions. These heat loss recorders, or katathermometers, as he named them, show the rate of cooling of a heated body, comparable to the human body, not only by radiation and conduction but by evaporation. They show the effects not only of temperature but of humidity and of air motion on that heat loss. By comparing the reading of the instrument with the feeling of comfort and of condition for work all over the globe, Hill has made the katathermometer a most reliable measure of the atmosphere as an envelope affecting health, and a guide to conditioning of indoor air to the needs for health.

The suggestion was made and tested a hundred years ago that there are atmospheric conditions of importance to the human body other than that of temperature. We wonder if it will be a hundred years hence before physicians and sanitarians fully recognize the importance of this discovery and come to make use of an instrument more fitting than the ordinary thermometer for testing those conditions.

BETTER HUMAN STOCK

The passage of a law at the recent session of the Oregon Legislature requiring women as well as men applying for marriage licenses to be examined as to mental and physical fitness is strictly in accord with the order of the day. However, laws having to deal with the question of marriage are often open to question because of the impracticability of the many measures introduced in the various State legislatures. Laws regulating marriage have but one purpose, namely, the production of better human stock. And in this connection a note of warning must be sounded or freak legislation will undo the constructive work of the past few years. The most recent instance of freak eugenic legislation was the bill considered by the Connecticut Legislature in which euthanasia was advocated for all mental derelicts. All persons born, however unfit, have the right to live, but they have not the right to become parents, and, thus, heap cruelty on innocent children. The Connecticut euthanasia measure met its death through ridicule of the lay press.

The production of better human stock is a national question. That such a question is fraught with much importance can be best realized when one stops to consider the effects of the late war on human breeding. Of paramount importance to the future welfare of the United States is the prevention of decadence: and the continuance of her greatness as a world power rests upon the production of sound human stock from the viewpoint of physique, intellect and character. A step in the right direction would be the creation of a department of health. This department of health should not be a mere bureau or an offshoot of some other body or department, but a real functioning department, thoroughly national in scope and character, the secretary of which should be a member of the President's cabinet. This department should not be under the control of either the Army Medical Department or Public Health Service, and should be free from politics, and untrammeled in policy. The secretary of health should be a level headed physician—and, especially one not encumbered with the bureaucratic traditions and jealousies of the various public services.

State legislation regarding physical and mental fitness for marriage is open to evasion and various subterfuges, and ease of travel between states often makes a nullity of certain laws, especially those laws of a repressive character. President Harding will have much to do within the next four years, and if during that time a national department of health is created, and a medical man invited to join the Cabinet the first step for better human stock in the United States will have been taken.

STAY IN BED.

So says the doctor, but had he known something of its composition he would advise staying out of it. Pennsylvania leads off in good insistence that her mattresses should not be made from rebuilt ones bought from homes, hotels or hospitals where germs have fertilized in wood or feathers. The cheap rebuilt bedding floods the Illinois market and other states where no laws exist. War is over, and the price for materials is still high, but the Federal Government has released all commandeered materials, and they are now available for use, but infractions of the law against wrong fillings are common, particularly that of filling with shoddy. Starting on the cutting table, tailors' clippings, for instance and underwear clippings, are thrown on the floor, trampled on, spat on by smokers and the tuberculous. They are swept up, sorted, and go to the shoddy mill and come out as new, shredded clippings.

The inspection of finished bedding gives a dismal story of fraud and deceit, of deliberate exposure of people to infection. The contents included old and tattered remnants of clothing or rags from the underwear of human derelicts, or from rags stored in damp cellars, or from burlap bags and gunny sacking of doubtful cleanliness. Thirty-six thousand five hundred and fifty second hand mattresses were destroyed at various times last year. Thirty-six thousand of these were sold by the Government to be converted into paper stock. Possibly, news, stories, reports of a disquieting nature, were printed on them and read by many who, wearily seeking rest on a guaranteed bed, tossed and tumbled, trying to forget, but the damage was slight compared with infections.

FAIR TO ALL.

There was a crowd at once, gathering swiftly round the doctor as he worked on the unfortunate woman who had had her hair caught in the shafting and the scalp completely torn from the head. The crowd looked angry. It was not "contributory negligence." It was not an "act of God," as insurance papers put it. Years ago the festering feeling of injustice would have been but slightly healed by such compensation as the bosses chose to give. Today, Justice comes along and declares man or master in the right, in this case declaring for "serious and willful misconduct on the part of employer"; thereupon great satisfaction on the part of employees. The E. Clemens Horst Company maintained at Wheatland, California, a plant in which an exposed, revolving shafting was used, this on a level with the eyes and hair of women employed. They had complained of the suction of the shafting pulling at their hair. Consequently, a woman, recovered, but badly disfigured for life.

The law holds that serious neglect on the part of employer increases the compensation fifty per cent., yet notwithstanding this decision enforced, the District Court of Appeal has another case of the same neglect by the same firm now before them. The law says that carelessness in precaution on the part of a local superintendent is the same as in a president, general manager, or other officer of the corporation. Insurance doctors and those who live among the poor, see the effects of accidents for which money cannot altogether compensate. They see the husband, the wife, made a helpless cripple, fretting their heart out at reduced earnings, growing abject and sullen as no hope comes of money earning recurs. They find a family advocate in the doctor of the commission, who carefully weighs their evidence in his own mind, and, moreover, looks ahead and sees the physical despondencies, the dull sense of injury, to those who can never be well again. His hardest task is to decide against the workman, who, by disregard of rules and safety appliances, has decidedly brought the evil on himself.

GYNECOLOGISTS IN PERSIA.

Dr. Lichtwardt, a medical missionary, tells that many of the Persian sick women are obliged to steal away, during their husbands' absence, to see a doctor. "Honorable Sir," says the introductory note, "please see me at once that I may return home before my husband, else he will beat me severely." We should not think neurotics abound, for the husband often says to the doctor: "Well, let her die, for even if she gets well I'll divorce her and get a new wife. I don't want a weak one in my house."

◆

News Items.

Immunization of School Children Against Diphtheria.—Immunizaton of 25,000 children in New York kindergartens and public schools was begun March 10th by the American Red Cross and the Health Department of New York.

Psychoanalysts in British Colleges.—A new diploma of psychological medicine has been instituted by Cambridge University, followed by London University and the Royal Colleges of Physicians and Surgeons. Leeds and Edinburgh are similarly provided.

Patient Throws Away Radium.—Radium valued at $13,000 was thrown away by a woman patient in the Faxton Hospital, Utica, N. Y., who did not appreciate its value. The radium was the property of Dr. George M. Fischer and was being used to treat a cancer of the woman's breast.

Promotions in the Public Health Service.—The following passed assistant surgeons have been commissioned surgeons in the Reserve Corps of the United States Public Health Service, effective October 20th: Walter L. Treadway, J. G. Townsend, C. H. Waring, and W. C. Witte.

Drug Addicts at Riverside Hospital.—The Riverside Hospital of the Department of Health is still open to drug addicts who need institutional care. There are at present twelve addicts in the institution undergoing treatment.

Shortage of Rural Doctors.—Migration of the country physician to the city has stripped some parts of rural New England of medical men. A bill is now before the Massachusetts Legislature to permit any town which has no doctor to appropriate money to induce a physician to establish himself in the community. Several towns have voted to guarantee a $500 a year income to obtain a physician.

Mitchel Field, Mineola, L. I., Laboratory Destroyed by Fire.—The medical research laboratories at Mitchel Field were destroyed by fire on Saturday night, March 19th. One of the most complete and valuable x ray equipments in the country, including apparatus for testing the heart and lung action in various atmospheric densities, and many war aviation records were totally destroyed.

Cancer Facts for Public.—The American Society for the Control of Cancer and the Department of Health have joined forces to put the facts of cancer and its treatment before the public. A series of lectures with illustrations were given during the week of March 6th in the public schools. Dr. Frederick T. Van Beuren, Jr., consulting surgeon of the Sloane Hospital for Women, and Dr. Francis Carter Wood, Director of Cancer Research at Columbia University, were among the specialists associated in the movement.

Cancer Deaths Increasing.—Herbert Hoover, Secretary of Commerce, has written a letter to the director of the National Research Council endorsing the movement to present a gram of radium to Mme. Curie when she arrives in May. In line with the effort to assist Mme. Curie in her fight against cancer, the Department of Health officials admitted that there had been an increase in the number of cancer deaths in New York City. In 1920 there were 5,361 deaths, in 1919 the total was 5,026, an increase of 6.6 per cent. The figures disclosed that the rate of New York's cancer increase was more than double that throughout the country. They also showed that cancer had superseded tuberculosis as the chief cause of death here, the rate increasing thirty-four per cent. in the last twenty years.

Physicians Hear Heart Beats Hundreds of Miles Distant.—An amplifying apparatus described as so delicate as to permit a physician to make a stethoscopic study of the heart action of a patient hundreds of miles away was demonstrated recently to a group of army and civilian medical men at the Army Signal Corps laboratories. The demonstration was directed by Brig. General George Squier, chief signal officer. The stethoscopic apparatus with electrical connection was placed over the heart of one of the laboratory assistants and the heart beat was amplified many thousands of times, emerging through a phonograph horn and studied by the physicians in a room some distance from that in which the subject was located. The device may be used in connection with any telephone wire and will function as far as the telephone wires will transmit the voice in ordinary conversation.

Harvey Society Lectures.—Dr. F. Gowland Hopkins, professor of biochemistry, University of Cambridge, delivered the ninth Harvey Society Lecture at the New York Academy of Medicine, Saturday evening, April 2nd. His subject was The Chemical Dynamics of Muscle. Sir Walter Fletcher, secretary of the Medical Research Committee of Great Britain, has been secured to deliver a Harvey lecture on Saturday evening, April 16th. Title will be announced later.

Personal.—Dr. Hugh H. Young, of Baltimore, is a patient at the Johns Hopkins Hospital, suffering from dilatation of the heart.

Dr. Louise Pearce, assistant to Dr. Simon Flexner at the Rockefeller Institute for Medical Research, has returned to America after six months' study of sleeping sickness in the Congo.

Colonel Francis F. Longley, who has been associate chief in the Department of Sanitation, was promoted to the position of chief of the department on the retirement of Professor Whipple.

Dr. Wilder G. Penfield has received the Beit fellowship at the University of London. He will make extended researches in the pathological development of medical science in England during the coming year.

Dr. Thomas R. Brown, chief of the Department of Medical Information, has returned to the United States to resume his duties in the Johns Hopkins University Medical School and Hospital. He still retains his position with the league and is expected to return next summer.

Dr. Morehouse Dies from X Ray Burns.—Dr. James T. Morehouse, of West Orange, N. J., sixty-three years of age, died on Monday, December 20th, at the New York Hospital, from the results of x ray burns suffered fifteen years ago. He had undergone four operations and had been in the hospital over two months.

◆

Died.

Anderson.—In Stromsburg, Neb., on Saturday, March 5th, Dr. Charles Alfred Anderson, aged fifty years.

Atherton.—In San Diego, Cal., on Monday, March 7th, Dr. Alfred Bennison Atherton, aged seventy-eight years.

Beattie.—In Pittsburgh, Pa., on Sunday, March 13th, Dr. Henry Osborne Beattie, aged sixty-one years.

Beauclerk.—In Concord, N. H., on Friday, March 18th, Dr. W. Preston Beauclerk, aged forty-six years.

Berge.—In New Orleans, La., on Monday, March 7th, Dr. Philip Berge, aged sixty years.

Bills.—In Ratom, N. M., on Thursday, March 10th, Dr. Joseph T. Bills, aged sixty-five years.

Bomberger.—In Washington, D. C., on Wednesday, March 2nd, Dr. George L. Bomberger, of Philadelphia, aged eighty-one years.

Booker.—In Baltimore, Md., on Tuesday, March 15th, Dr. William David Booker, aged seventy-six years.

Carroll.—In Canandaigua, N. Y., on Monday, March 7th, Dr. Henry C. Carroll, aged seventy years.

Chase.—In Wyncote, Pa., on Sunday, March 13th, Dr. Robert Howland Chase, aged seventy-five years.

Chandler.—In Salt Lake City, Utah, on Tuesday, February 22nd, Dr. Charles Mount Chandler, aged sixty-three years.

Chilson.—In Beloit, Wis., on Thursday, March 3rd, Dr. Benjamin Chilson, aged sixty-three years.

Corbett.—In Driftwood, Pa., on Thursday, March 3rd, Dr. Vander K. Corbett, aged sixty-two years.

Close.—In New York, on Friday, March 11th, Dr. George Hastings Close, aged forty-nine years.

Cott.—In Buffalo, New York, on Tuesday, March 22nd, Dr. George F. Cott, aged sixty-five years.

Crowley.—In Batavia, N. Y., Sunday, March 20th, Dr. James F. Crowley, aged sixty-one years.

DeWeese.—In Denver, Colorado, on Tuesday, March 8th, Dr. John M. DeWeese, aged sixty-four years.

DeWitt.—In Philadelphia, Pa., on Friday, March 4th, Dr. James DeWitt, aged ninety-five years.

Dicker.—In Oak Park, Ill., on Tuesday, March 2nd, Dr. Willard Woodard Dicker, aged thirty-six years.

Dunlop.—In Alpena, Michigan, on Tuesday, March 2nd, Dr. James D. Dunlop, aged sixty-four years.

Egeberg.—In San Francisco, Cal., on Tuesday, March 8th, Dr. Jules Egeberg, aged forty-five years.

Ehlinger.—In College Station, Texas, on Monday, February 28th, Dr. Otto Ehlinger, aged fifty-two years.

Ellis.—In Denver, Colorado, on Monday, March 7th, Dr. Charles Arthur Ellis, aged fifty-two years.

Ferguson.—In Santa Fe, N. M., on Tuesday, March 8th, Dr. Roy Harrison Ferguson, aged thirty-four years.

Halsey.—In Williamstown, N. J., on Sunday, March 20th, Dr. Luther M. Halsey, aged sixty-three years.

Hobbs.—In Atlanta, Ga., on Wednesday, March 9th, Dr. Arthur G. Hobbs, aged sixty-seven years.

Kenny.—In Troy, N. Y., on Sunday, March 6th, Dr. Laurence Kenny, aged sixty-two years.

Kramer.—In Dayton, Ohio, on Wednesday, March 16th, Dr. Jost D. Kramer, aged forty-one years.

Lambert.—In Clinton, Ia., on Thursday, March 3rd, Dr. Charles Curtis Lambert, aged forty-six years.

Lederle.—In Goshen, N. Y., on Monday, March 7th, Dr. Ernst J. Lederle.

Leveridge.—In New York, on Wednesday, March 16th, Dr. Silas Pierson Leveridge, aged sixty-five years.

Lichty.—In Elk Lick, Pa., on Sunday, February 27th, Dr. Albert M. Lichty, aged sixty-one years.

Link.—In Parkersburg, W. Va., on Sunday, March 6th, Dr. Walter S. Link, aged fifty years.

Lussier.—In Woonsocket, R. I., on Monday, March 7th, Dr. Walter J. Lussier, aged forty-one years.

McKee.—In Versailles, Ky., on Tuesday, February 15th, Dr. John Robert McKee, aged seventy-eight years.

Mann.—In Petersburg, N. Y., on Monday, March 7th, Dr. Charles Maitland Mann.

Minor.—In Lesterville, Mo., on Thursday, March 10th, Dr. Richmond Terrill Minor, aged seventy-six years.

Pechmann.—In Hulburton, N. Y., on Saturday, March 5th, Dr. Henry W. A. Pechmann, aged fifty-three years.

Ransohoff.—In Cincinnati, Ohio, on Thursday, March 10th, Dr. Joseph Ransohoff, aged sixty-eight years.

Rentschler.—In Ringtown, Pa., on Friday, March 4th, Dr. Henry D. Rentschler, aged eighty years.

Sears.—In Binghamton, N. Y., on Tuesday, March 8th, Dr. Frank Walker Sears, aged sixty-three years.

Smith.—In Harrisburg, Pa., on Monday, March 14th, Dr. Charles Edward Smith, of Center Mills, aged seventy-one years.

Smith.—In California, Pa., on Sunday, March 20th, Dr. Robert W. Smith, aged thirty-one years.

Sprayberry.—In Walnut Grove, Ga., on Thursday, February 24th, Dr. Camden M. Sprayberry, aged thirty-five years.

Steade.—In San Diego, California, on Thursday, February 24th, Dr. James Milton Steade, aged fifty-seven years.

Stevens.—In Bristol, Wis., on Saturday, March 5th, Dr. Frank E. Stevens, aged sixty-nine years.

Sweeney.—In Kingston, N. H., on Friday, March 11th, Dr. Henry Lee Sweeney, aged sixty-two years.

Taylor.—In Pomeroy, Pa., on Tuesday, March 15th, Dr. Thomas A. Taylor, aged eighty-three years.

Thompson.—In Blue Mountain, Miss., on Friday, March 11th, Dr. Cyrus Young Thompson, aged ninety years.

Thompson.—In Forty Fort, Pa., on Sunday, March 20th, Dr. James R. Thompson, aged fifty-three years.

Van Vleet.—In Stamford, Conn., on Saturday, March 12th, Dr. Peter P. Van Vleet, aged seventy-four years.

Waage.—In Pennsburg, Pa., on Wednesday, March 2nd, Dr. Charles T. Waage, aged ninety-three years.

Wagner.—In Chicago, Ill., on Saturday, March 12th, Dr. Carl Wagner, aged fifty-eight years.

Wilkins.—In Seattle, Wash., on Thursday, March 10th, Dr. Sylvester Wilkins, aged eighty-four years.

Book Reviews

VITAMINES.

Vitamines, Essential Food Factors. By Benjamin Harrow, Ph. D., Associate in Physiological Chemistry, College of Physicians and Surgeons, Columbia University. New York: E. P. Dutton & Co., 1921. Pp. x-219.

Those who are not quite sure what vitamines are, but regard them as the special property of the faddists, should not only read Benjamin Harrow, but the painful account of the determined search by learned London men of the Lister Institute and the symposium held in New York. They will learn all that genteel vitamines will do when politely invited to abide with us, and what revengeful powers they will use when kept away. Would you like to have hunger osteomalacia? They have it in Vienna, and learned men and very learned ladies from the Accessory Food Factors Committee are having a strenuous time feeding up the people with foods known to contain the vitamine A: fats, codliver oil, butter, rape oil, olive oil, and 'margarine.

At big medical centres here and in England first rate men are working hard. At Cambridge, Rowland Hopkins is studying the stability of accessory food factors under varied conditions. The quantitative evaluation of the antiscorbutic principle in foodstuffs and the experimental production of pellagra are being studied at the Lister Institute. Professor Korentchevsky, who was compelled to leave his work in Petrograd, has received a grant for whole time work to study the relations of the activities of the ductless glands, especially in beriberi and rickets.

Even the wayfarer, though a fool, cannot plead unintimacy with vitamines after Harrow's first two chapters. They are lucid, very lucid, and I fear the wayfarer will have his tramping spoiled because in doubt whether country stores and village inns will give him all he needs, for he has read about carbohydrates, fats and proteins, and knows now what he should have, and wherein the army diet, carefully calculated, failed or succeeded.

Hopkins of Cambridge, Osborne of the Connecticut Experimental Station, and Mendel of Yale, are largely quoted and their work given, especially with aminoacids. The frisky rat and gentle guineapig speak also, confirming their statements.

The story of beriberi and Takaki's work all will enjoy, and how the accident of the fowls dying brought the attention of Eijkman, the Dutch doctor at Java, to the subject. The lack of vitamines in rickets, scurvy and pellagra is clearly dealt with and shown, and how "ill balanced" diets are often as bad as deficient ones: orange juice may just turn the balance in scurvy, codliver oil in rickets, but not olive oil; the former is rich in fat soluble A, the latter not. The studies of many men and women were given to rickets during the war.

The appendix gives the notes compiled by the Committee on Accessory Food Factors under F. G. Hopkins and Harriette Chick, and will serve for present use and in the next war. Read slowly, pause often, think deeply.

Some may ask how men managed to live and be strong before food values were known and discussed; when the life power of bread, milk, meat, and fish, were unquestioned.

Just this: Pure milk, pure bread, fresh meat and fish are now difficult for the majority to get, and fruit and vegetables are very expensive for the town dweller. All potted and canned goods have lost somewhat in conservation, yet, with all this deterioration, man requires even more fit food, as he leads a more active life intellectually. School children also require pure food for the same reason. Any author who writes and speaks of the failure of food must not speak of the local dairyman and baker as selling pure, creamy milk or bread as it should be eaten. We have today the question of stomachs which do not get pure food, yet require it more than ever. They cannot always get the natural food, water, in a good condition.

It will be of no use reading the book just to get enough to talk about vitamines, as there are many points still in dispute, many studies incomplete, and from week to week knowledge increases. Get all the main points rightly in your head and your eye will quickly be attracted by any press or other notices concerning the correction of one idea or the raising of another.

NERVOUS DISEASES.

The Diagnosis of Nervous Diseases. By Sir James Purves Stewart, K. C. M. G., C. B., M. D. (Edin.), F. R. C. P., Senior Physician to the Westminster Hospital; Physician to the Royal National Orthopedic Hospital; Consuling Physician to the West End Hospital for Nervous Diseases; Membre Correspondant de la Société Neurologie de Paris, etc. Fifth Edition. Revised and Enlarged. New York: E. B. Treat & Co.; London: Edward Arnold, 1920. Pp. viii-584.

The value of a book is attested, not alone by its reappearance in successive editions, but in the progressive outlook which such a book affords as its original matter permits of revision through hospitality toward new discoveries and new points of view. This book loses none of its former clearness and force in its presentation of practical problems which present themselves in the diagnosis of nervous diseases.

There is first a direct outline of the chief anatomical and physiological features of the nervous system. The text here, as throughout the book, is generously provided with clear illustrations of the matters discussed. The suggestions for practical diagnosis and therapy, so far as the latter is taken up, are succinct and to the point. A short chapter is given in regard to case taking, followed by various chapters headed so as to present certain outstanding phenomena which the diagnostician meets most obviously, their deeper, less conspicuous features, and so their real clinical bearing forms the goal of the discussion. These are chapters on coma, fits, involuntary movements, aphasia and disorders of articulation. A chapter on the cranial nerves deals with disorders particularly associated with these nerves in turn. Pain is discussed as a general phenomenon, and is then taken up more especially in its relation to various disorders. Headache is given ample consideration in this connection, attention being called to its many forms and the need of relating any manifestation of it to its proper, often remote, cause.

Motor and sensory disorders receive special attention, and so do incoordination, postures and gaits. The reflexes are discussed as regards their significance for different purposes of diagnosis. Trophoneuroses are also given separate consideration. The point of view of the discussion of the vegetative nervous system is such as to suggest, even if not quite emphatically and fully enough, the increasing recognition of its interrelation with all other nervous and organic activities and manifestations.

In the section on the neuroses new material has been added in regard to war lesions and war neuroses. The author shows himself hospitable to advances in interpretation and therapy, but much is left to be desired. The ground of mental symptoms is not very fully covered, and symptoms still attached to the old nonexplanatory neurasthenia and psychasthenia lack causal interpretation and dynamic comprehension. Hysteria receives fuller discussion with a good deal of stress upon Babinski's approach to it. The statements in regard to psychoanalytic interpretation and therapy show some appreciation of its place in medicine, but, like so many critics, the author seems to have grasped only a few of the earlier theories of psychoanalysis. He has not advanced with its expansion beyond these, and, therefore, does not respond to its increasing interpretative and healing service.

REPORT OF SURGEON GENERAL.

Report of the Surgeon General, U. S. Army, to the Secretary of War, 1920. Washington: Government Printing Office, 1920. Pp. 755.

This book is, perhaps, the most solemn of all the war records. It deals not with shattered trains, disabled armaments, towns taken, towns lost, lack of supplies, sunken vessels, stealthy submarines. It deals with the story of Life and Death, how lost, how nearly lost, or won, no names, just men. Its reading, very sad.

Influenced by kings conquering, by kings exiled, by the sway of knowledge in warfare and medicine gained, by the attacks by old foes, tuberculosis and syphilis and death, by the mortality of animals, the cleanness of water, the recording man at Washington wrote his big survey, covering the general activities for the year ending June, 1920, and containing the statistics for the Army up to December, 1919.

The first part—Battle Casualties—cannot recall the shock and the stab of contemporary newspapers, but is dismal reading. Two million thirty-nine thousand three hundred and twenty-nine went to France. One hundred and ten out of every thousand came to hospital as a result of battle injury, six and three quarters died there as a result from injury. The infantry suffered the heaviest loss, 215.66 per thousand wounded, 12.77 per thousand killed. At the end of 1919, 5,768 soldiers still remained in U. S. hospitals as the result of battle injuries. A small number, if compared, they say, but large if you imagine them standing for review and standing for review no longer physically fit. It is given as a cheerful piece of information that no one soldier lost both arms and both legs, always one of either left to make a *Te Deum* out of! Every form of ill which laid them aside temporarily or infantile measles or shattering gun, is all entered up, not only of men but animals, who suffered from nerves almost as much as the men and also from hysteria! The marvel being how men kept in life with so many and unforeseen exits from it. The question of venereal diseases is dealt with in all its ugly aspects. It is difficult to touch on a subject where leaders as well as men are concerned and where large statistics redound more to the disgrace of the former than the latter sections of the Army. The sanitary work generally—and it was enormous—was carried out in all camps, here and in Europe, with wonderful efficiency considering the new circumstances to be dealt with. One great piece of work came with demobilization. The records, not wholly finished, show 19,750 discharged by disability between February, 1919, and December 31, 1919. Reenlistment was begun March, 1919, 176,264 men applied, and of these 88,612 were rejected, that is only 70,000, or thirty-nine per cent. became soldiers. In view of the liberality of the physical requirements, this number was not complimentary to the physical vigor of the men applying.

Since the war, all departments, medical, sanitary and research, have been planning to profit by the obvious mistakes made during the war, and, on paper, they read excellently well. The sums demanded for keeping men fit, for additional hospital, laboratories, museum accommodation is rather alarming, the need for neuropsychiatric clinics is intelligible to the wise. There were about 9,000 of such cases returned during the war from overseas, just a shade in excess of those sent suffering from tuberculosis. It has been tried to retain a high class psychologist at each base, but, naturally, the specialists who helped during the war have returned to their regular work and amateurs will not do. Foremost among the prevailing difficulties is the confusion of the different mental scales.

There is the Nursing, the Dental, the Veterinary Sections all being revised. A tremendous upheaval, with one cry always heard, money, money. One item—the accession of 40,283 books, 5,475 pamphlets, and 446 portraits of doctors to the Library of the Surgeon General during 1919-20. What the placing of these means; what the loss of ten of the library staff means only those who work there can adequately tell.

One of the most interesting sections is Medical Department Activities in Europe and Siberia July 1 to December 31, 1919, and in Germany since the armistice; also for North Russia in 1918-19 and for Siberia. Behind the well ordered language, the bare statement of adverse facts, those who know can read all that these meant to the Army. One can imagine the remarks on the shortage of coffee and beef, of flour and canned goods, in Russia, and pleased indeed are we to hear that the deficiencies resulted in dissatisfaction and not disease, though at times a discontented soldier is worse than a sick one.

The book takes us also to the Philippines and to every military camp and hospital, giving an honest account of what has been done, what remains to be done, of the latest educational ideas for the soldiers in barracks.

Two hundred and fifty-eight pages of this big report are taken up by statistical tables, wonderful sheets of figures concerning admissions, deaths, diseases, etc. The book is the groundwork of the Medical and Surgical History of the War, now in hand. The work of building up again is now in hand. At the end of the fiscal year the Reserve in the Medical Corps was 5,611, in the Dental 3,699, and in the Veterinary 331.

Facts, facts, facts, and behind those incidents, deeds of great bravery in fighting the open enemy and the hidden enemy of disease and lust, the last foe, Death.

The mean jealousies, the despicable disparagement, the refusal to see merit, the loneliness of the leader misunderstood, the dismay of the valiant commander, who lacked only experience, yet whose ignorance filled many graves.

The noise of warfare is hushed awhile. The injured recruit, the dead sleep, the book will go on the shelf only to be taken down to recall forgotten facts.

DYSENTERY.

Surgical Aspect of Dysentery Including Liver Abscess. By Zachary Cope, B. A., M. D., M. S. (Lond.), F. R. C. S. (England), Surgeon to Out Patients, St. Mary's Hospital; Surgeon to the Bolingbroke Hospital; Captain, R. A. M. C., T. F. Surgical Specialist with Mesopotamian Expeditionary Force, 1916-1919; Hunterian Professor, R. C. S. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1920. Pp. x-157.

The terms diarrhea and dysentery used by the laity require careful inquiring into by the doctor. We knew a man with habitual constipation who came complaining of diarrhea because he had had two movements daily, and of dysentery because of three. New arrivals in southern elevated places, such as occur in parts of Texas, if not very careful about diet at first, get a mild wearying complaint called mountain dysentery, which may persist for years, occasioning only slight weakness and fever and kept in check by emetine, the uncleanliness and social disability generally being most complained of.

Dr. Zachary Cope gives us his experiences and those of others concerning surgical complications, because of the greater number of men now going to and from the East and because latent, subacute and chronic dysenteric cases are now distributed in temperate as well as tropical parts.

He classifies the surgical complications of dysentery as follows: Perforation of colon causing general peritonitis or pericolic abscess; acute edematous localized colitis, such as typhlitis; dysenteric appendicitis; extensive sloughing—the colonic pus sac, cicatrization and stricture of the colon or rectum; perinephritic abscess; hemorrhoids; periproctitis, and deals with each in turn as to symptomatology, simulation of other diseases and chances from operation.

In amebic hepatitis he points out the necessity of the surgeon having a sound knowledge of the symptoms, since it is the first stage toward amebic abscess of the liver and prompt recognition may save a patient from the danger of operation. Some of the mistakes made are from seeing a hepatitis with jaundice caused by malaria. Cholecystitis or appendicitis are also then diagnosed, but in a tropical country the wise surgeon will try a short course of emetine before operating on these. The surgeon newly practising in tropical places or seeing many returning therefrom, should keep liver abscess as a possible diagnosis in every obscure or doubtful case. The cases may be divided into two—fever and little fever. The last are chronic cases. The emetine treatment is useful in both, because, even if an abscess be formed, it will lessen congestion and make puncture less dangerous. The prevention of amebic abscess is now possible, thanks to the researches and clinical acumen of Sir Leonard Rogers with emetine. Full details are given for operation, also Rogers' method of repeated aspiration through special cannula for abscesses uncontaminated by bacterial infection. Sir James Cantlie recommends siphon drainage for "deep-seated pus which does not bulge either toward the anterior abdominal wall or toward the right lower intercostal spaces." His method is better in deep-seated abscesses when conditions are not favorable for nursing or more extensive surgery.

Among the rarer complications in amebic dysentery are cerebral, renal, or splenic abscesses, says the writer. Brain abscess never occurs apart from liver abscess. Kartulis, Jacob and Legrand confirm this in their statistics. "The symptoms of dysentery may be absent, and hepatitis develop so insidiously that both liver abscess and brain abscess may be discovered only at autopsy."

Conjunctivitis and iritis are not infrequent in bacillary dysentery. The French surgeons always associate diarrhea, conjunctivitis and arthropathies. Other complaints associated are esophagitis, periostitis, cystopyelitis, pyemia and parotitis, boils, and abscesses, thrombosis, intussusception, etc.

Very clearly and concisely written is the book. It is not padded out with that which the other man thinks, but is a simple statement of experiences gained concerning an enemy which is now not wholly a tropical disease.

OPTIMISTIC MEDICINE.

Optimistic Medicine or Early Treatment of Simple Problems Rather Than the Late Treatment of Serious Problems. By a Former Insurance Man. Philadelphia: F. A. Davis Company, 1921. Pp. ix-318.

Through all the pages of this book the "family physician" is dodging around armed with the knowledge which will speedily correct by warning or treatment the incursion into our health reserve of those common evils such as colds, coughs, ill digestion, headaches, pains on getting up, pains on going to bed, all of which involve not only a man's own comfort but that of the family, for they have, willingly or otherwise, to suffer from his small troubles or similar ones which afflict some other member. Let the invalids go to the doctor and get the real cause of the complaint explained, how to bear it until right living has carried it away. They will learn the evils of suddenly beginning the routine of a splendidly healthy man, which stupidity

Nature rewards by sudden death or a chronic condition of ill health. The man or woman whose usual daily walk has been to the nearest subway and who suddenly starts off ten miles a day to "walk off their fat" or indigestion, or who suddenly take nothing but vegetables or fruit, instead of three meat meals a day, ought to be sure that they are getting enough compensation in the new diet. Vegetarianism in a city is not easy.

Also, the everyday ailments may indicate incipient disease easily stayed if taken in time. The author enumerates those which are allowed to commonly grow through neglect, and he does all this in a nonalarming, sensible way, advice which, if faithfully followed, would bring the family physicians to serious pecuniary embarrassment.

He speaks of the benefit of a saving sense of humor even in children, telling of a little boy who was bored by an elderly lady asking what made his hair curl. He looked at her, then drawled, "I don't know; I expect it's because I eat so much hash." He must have been related to the boy who, in response to "Well, my little man, what might your name be?" from the genial doctor, said, "It might be Beelzebub, but it isn't."

OLD WINES FOR NEW.

The Uses of Diversity. By Gilbert K. Chesterton. New York: Dodd, Mead & Co., 1921.

After turning out a philippic on divorce and a bundle of paradoxes on Ireland, Mr. Chesterton has now published another volume of essays. These are quite in his usual manner, though neither the philippic nor the paradoxes attain the same crystalline style as the present book. In subject matter the essays are diverse to the point of piquancy. Literature, the Domesticity of Detectives, the Morals of Nippon, Sexual Science, Pigs as Pets, Christian Science, and Spiritualism are some of the topics on which Mr. Chesterton breaks a lance. Throughout he writes with the fine, easy gesture of leisured reflection and a ripe acquaintance with things in which the human spirit takes delight.

But Mr. Chesterton has a curious bent for fantasy in speculation which often leads him astray. For instance, he hates modern industry, with its mechanization and standardization, and with its removal of the worker from that robust joy in his craft which the worker of medieval times enjoyed. Mr. Chesterton, however, thinks that all this can be remedied by setting the clock back and returning to the age of small peasant holdings, handicraft manufactures, and a patriarchal church surmounting all. He does not see that progress can be made only by utilizing the things which are distinctively of the present—large scale productive units and a high degree of division of labor—and that the peasant farmer and the small craftsman in his little shop cannot feed and clothe the world of today.

Similarly he hates modern science—no one knows why. Certainly he cannot blame it for the sins of the factory, though this is what he attempts to do. Modern science, he says, is like a high jumper who falls short in that it is so sure of where it is going to that it doesn't know where it comes from. Of course this means nothing at all. Most fantastic of all is his attack upon Forel, to whom he attributes the statement that man has no conscience, and whose entire research he dismisses with a five finger exercise in logic. In comments on the fine arts he is more fortunate, and there is an essay on Meredith which is one of the best ever penned. Mr. Chesterton has a mellow appreciation of the Victorians because they, too, are of the past which he reverences. On the other hand the Futurists, who are new, earn his undivided scorn, in an essay with which the reader may have a good deal of sympathy.

All these essays are studded with paradoxes. But below all the flippant scorn for the new, below the perfection of easy and felicitous language, is something else which makes up for Mr. Chesterton's scientific deficiencies. That is a sincere and unaffected love for common men and common things and simple living, for poetry and fire and for the earth which nourishes both. This is what lies at the root of all the perversities in Mr. Chesterton's writing. It is because he loves, nay more, respects the common man that he hates to see the worker a slave to his machine, living a squalid life without creative stimulus or spiritual contact. It is because he loves simple living that he wants to go back to the peasant farm and the village church. It is because he loves the fire that he hates the steam engine, because he loves the moon that he hates the astronomer. In spite of his elaborate dogmas, Mr. Chesterton is a poet who has run amuck in a tangle of paradoxes.

PERSONAL AND COMMUNITY HEALTH.

Short Talks on Personal and Community Health. By Louis Lehrfeld, M. D., Department of Public Health, Philadelphia. With Introduction by Wilmer Krusen, M. D. Philadelphia: F. A. Davis Company, 1920. Pp. xii-271.

The dull eyed, slow gaited, toothless, bathless old travelers on Life's highway are becoming a little weary of being constantly stirred up to become hygienic; in fact, some are not sure whether hygiene is a new food or a fad or a religion. The middle-aged, with growing families and decreasing incomes, sniff dubiously over the wonderful health papers their children bring home, especially when a tuberculous boy says his teacher told him to "sleep indoors with his lungs outside," or to run around a nonexistent garden before a nonexistent breakfast, with absolutely the right number of calories, is ready.

Clearly, then, the hope of the reformer is in the children, making them see and desire that which is clean and pure in home and city. They will remember things you did not tell them, and get upside down ideas. But reiteration and long patience will equip them to rebel against dirt and disease, and their children will smile at the queer ideas grandmother cherished. A grim list of stealthy foes are introduced in Part I. You may avoid typhoid, but grippe is sneaking around the corner. Free from pneumonia, you may contract smallpox. Swat your flies, yet the lazy bedbug and the whisking rat will come o' nights. Keep your home clean and work all day in a dirty factory. Have a bath, an ice safe, nourishing food in your two roomed home, yet keep an eye for unasked guests. The gentle cow may send you tuberculosis or scarlet fever or typhoid. The nice fat pig may bring trichiniasis. Beware of the curling and winding tapeworm. Kill the loved, mangy mongrel—he may go mad; kill the cat—she is a sly carrier of disease. Give your spare time, or at least cooperation, to those who chase around after wicked men in slaughter houses, markets, shops, junk places, who deserve no license. Do not have a family toothbrush, comb and towel. Let the mealtime be cheerful, and children require a variety of food. The heaviest meal should be in the middle of the day; infants should do nothing between meals.

The book is for schools and colleges and social workers, and to them it will be useful in suggestions. The derivation of some words would give them a better chance of sticking in the memory. One difficulty will have to be faced. The children of the working class, taught by their fathers, are beginning to ask why, for them, such common things as decent rooms and fresh air do not exist. "Knowledge is power—" against whom or what it will be used. It would be well in using the true but miserable facts in teaching, to be sure that plenty of the high and wonderful and beautiful things in the natural world have also a place. Especially do this with children, or their eyes, round with pretty curiosity, will grow dull and dim before our exposition of a world full of lurking disease and dirt and a band of health officers, nurses, teachers and policemen shouting warnings as the fearful results of venturing on these miry paths, while the kind rich, putting up that "trespassers will be prosecuted" on all the charming country paths to which Nature mirthfully beckons.

POGROMS.

The Slaughter of the Jews in the Ukraine in 1919. By Elias Heifetz, J. U. D. New York: Thomas Seltzer, 1921. Pp. iii-408.

This book gives the tragedy of the Jews in the Ukraine in the year 1919. It is a terrible textbook in the inhumanity of man. We may think we have no concern with matters such as are related here, but the stories of some of our lynchings show a touch of the same ferocious cruelty. The author has not deliberately set out to be harrowing; in fact his contributions are mainly statistical and analytical, but there are more than two hundred pages of testimony by eye witnesses and victims of the remorseless Ukrainian peasantry which are searing, unforgettable reading.

In his analysis of the social and political causes of the pogroms Dr. Heifetz says that under the tsarist regime pogroms were encouraged "to divert the attention of the socially and politically discontented masses in another direction, the direction of least resistance." Later, when the revolutionary forces began to break loose, the agents of the tsar depicted the Jews to the peasantry as the leaders of rebellion against the "Little Father." Confirmation has since been received of "what was generally known, that the threads of the entire pogrom propaganda were held together in the hands of the highest representatives of the state force, the all powerful minister of internal affairs and the director of police," the author says. "They determined the places where pogrom dramas were to be enacted, and gave proper instructions to the local authorities."

When the Ukrainian People's Republic came into the saddle, pogroms were used again as a weapon against the Soviet Government of Russia, which to the small landholding peasants signified not only communism but the will-to-power of the Jews.

The material here presented was gathered by delegates of the All-Ukrainian Relief Committee for the Victims of Pogroms, under the auspices of the Red Cross, of which the author was chairman. It is not only an exhaustive study of the pogroms, but it is a profoundly moving report.

MONOGRAPH ON THE STOMACH.

Taschenbuch der Magen- und Darmkrankheiten. Von Dr. Walter Wolff, dirig. Arzt der inneren Abetilung am Konigin - Elisabeth - Hospital, Berlin - Oberschöneweide. Zweite, vermehrte und verbesserte Auglage. Mit 18 Textabbildungen und einer farbigen Tafel. Berlin-Wien: Urban & Schwarzenberg, 1920. Seiten vii-199.

This monograph describes in a concise manner the diagnostic methods concerning gastrointestinal diseases accessible to the general practitioner. The author shows that most of the methods can be easily learned and applied without much difficulty. The x ray findings are given and the usual form of treatment discussed. Dr. Wolff's book can be highly recommended as valuable and full of useful information.

◆

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

TWO MOTHERS. By John G. Neihardt. New York: The Macmillan Company, 1920. Pp. 82.

BLIND. A Story of These Times. By Ernest Poole. New York: The Macmillan Company, 1920.

THE SISTERS-IN-LAW. A Novel of Our Time. By Gertrude Atherton. New York: Frederick A. Stokes Company, 1921. Pp. 341.

EARLY TUDOR POETRY. By John M. Berdan. Studies in Tudor Literature, 1485-1547. New York: The Macmillan Company, 1920.

TREATISE ON GENERAL AND INDUSTRIAL ORGANIC CHEMISTRY. By Dr. Ettore Molinari, Professor of Industrial Chemistry at the Royal Milan Polytechnic and at the Luigi Bocconi Commercial University. Translated from the Third Enlarged and Revised Italian Edition by Thomas H. Pope, B. Sc., A. C. G. I., F. I. C. Part I, with 254 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. PP. xv-456.

ORTHOPEDICS FOR PRACTITIONERS. An Introduction to the Practical Treatment of the Commoner Deformities. By Paul Bernard Roth, M. B., Ch. B. (Aberd.), F. R. C. S., (Eng.) Senior Surgeon, and with charge of Orthopedic Cases, Kensington General Hospital; Member of Orthopedic Section, Royal Society of Medicine; Late Surgeon, City of London Military Hospital; Senior Orthopedic Clinical Assistant, London Hospital, etc. London: Edward Arnold, 1920. Pp. xii-195.

THE LIFE AND WORK OF SIR JAGADIS C. BOSE, M. A., D. Sc., LL. D., F. R. S., C. I. E., C. S. I., Emeritus Professor, Presidency College, Calcutta and Director of the Bose Research Institute. An Indian Pioneer of Science. By Patrick Geddes, Late Professor of Botany (University College, Dundee), St. Andrews University, and Professor of Sociology and Civics, University of Bombay. With Portraits and Illustrations. London, New York, Bombay Calcutta and Madras: Longmans, Green & Co., 192 Pp. xii-259.

THE LOST GIRL. By D. H. Lawrence. New York: Thomas Seltzer, 1921. Pp. 378.

AMERICAN RED CROSS WORK AMONG THE FRENCH PEOPLE. By Fisher Ames, Jr. New York: The Macmillan Company, 1921. Pp.

FIGURES OF EARTH. A Comedy of Appearances. By James Branch Cabell. New York: Robert M. McBride & Co., 1921. Pp. xvi-356.

THE LOGIC OF THE UNCONSCIOUS MIND. By M. K. Bradby. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1920. Pp. xiv-316.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. For the Fiscal Year 1920. Washington: Government Printing Office, 1920. Pp. 391.

THE EFFECT OF CERTAIN AGENTS ON THE DEVELOPMENT OF SOME MOULDS. By K. G. Bitting, M. S., Bacteriologist, Glass Container Association of America. Washington, D. S. National Capital Press, Inc., 1920. Pp. 176.

VITAMINES, ESSENTIAL FOOD FACTORS. By Benjamin Harrow, Ph. D., Associate in Physiological Chemistry, College of Physicians and Surgeons, Columbia University. New York: E. P. Dutton & Co., 1921. Pp. x-219.

A TEXTBOOK OF PATHOLOGY. By W. G. MacCallum, Professor of Pathology and Bacteriology The Johns Hopkins University, Baltimore. Second Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1920, Pp. xv-1155.

LES LIPOIDES DANS L'INFECTION ET DANS L'IMMUNITE. Par le Docteur G. Linoissier, Professeur agrege a la Faculte de medicine de Lyon; Membre correspondant de l'Academie de medecine. Paris: Librairie J. B. Bailliere & Fils, 1920. Pp. 105.

THE CROONIAN LECTURES ON THE PSYCHOLOGY OF THE SPECIAL SENSES AND THEIR FUNCTIONAL DISORDERS. Delivered before the Royal College of Physicians in June, 1920. By Arthur F. Hurst, M. A., M. D. (Oxon.), F. R. C. P., Surgeon and Neurologist to Guy's Hospital. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1920. Pp. x-123.

THE LIFE BEYOND THE VAIL., Spirit Messages Received and Written Down by the Rev. G. Vale Owen, Vicar of Oxford, Lancashire. With an Appreciation by Lord Northcliffe and an Introduction by Sir Arthur Conan Doyle, M. D., LL. D. Edited by H. W. Engholm. Book I: *The Lowlands of Heaven.* Book II: *The Highlands of Heaven.* New York: George H. Doran Company, 1921. Pp. viii-232; ix-251.

SURGICAL ASPECTS OF DYSENTERY INCLUDING LIVER ABSCESS. By Zachary Cope, B. A., M. D., M. S. (Lond.), F. R. C. S. England), Surgeon to Out Patients, St. Mary's Hospital; Surgeon to the Bolingbroke Hospital; Captain, R. A. M. C., T. F. Surgical Specialist with Mesopotamian Expeditionary Force, 1916-1919; Hunterian Professor, R. C. S. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1920. Pp. x-157.

DISEASES OF THE NOSE AND THROAT. By Herbert Tilley, B. S. (Lond.), F. R. C. S. (Eng.), Surgeon Ear and Throat Department, University College Hospital, London; Surgeon Ear and Throat Department, King George's Hospital (Red Cross); Teacher of Laryngology and Otology, University of London; Laryngologist to the Radium Institute, London, etc. Fourth Edition, With Seventy-Four Plates and Numerous Text Illustrations. New York: Paul B. Hoeber, 1920. Pp. xx-844.

THE OXFORD MEDICINE. By Various Authors. Edited by Henry A. Christian, A. M., M. D., Hersey Professor of the Theory and Practice of Physics, Harvard University; Physician in Chief to the Peter Bent Brigham Hospital, Boston, Mass., and Sir James Mackenzie, M. D., F. R. C. P., LL. D., F. R. S., Consulting Physician to the London Hospital, and Director of the Clinical Institute, St. Andrews, Scotland. In Six Volumes, Illustrated. Volume III: Diseases of the Digestive System, Kidneys, and Ductless Glands. New York, London, Toronto, Melbourne, Bombay: Oxford University Press, 1921. Pp. xii-828.

HEARTS OF THREE. By Jack London. New York: The Macmillan Company, 1920. Pp. ix-373.

HYGIENE, DENTAL AND GENERAL. By Claire Elsmere Turner, Assistant Professor of Biology and Public Health in the Massachusetts Institute of Technology; Assistant Professor of Hygiene in the Tufts Medical College and Dental Schools. With Chapters on Dental Hygiene and Oral Prophylaxis by William Rice, Dean, Tufts College Dental School. St. Louis: C. V. Mosby Company, 1920. Pp. 400.

PRACTICAL PSYCHOLOGY AND PSYCHIATRY. For Use in Training Schools for Attendants and Nurses in Mediical Classes, and as a Ready Reference for the Practitioner. By C. B. Burr, M. D., Medical Director of Oak Grove Hospital, (Flint, Mich.), for Mental and Nervous Diseases; Member of the American Medico-Psychological Association. Foreign Associate Member of Société Medico-Psychologique of Paris, etc. Fifth Edition. Revised and Enlarged. With Illustrations. Philadelphia: F. A. Davis Company, 1921. Pp. vii-269.

INDUSTRIAL COLONIES AND VILLAGE SETTLEMENTS FOR THE CONSUMPTIVE. By Sir German Woodhead, K. B. E., V. D., M. A., M. D., LL. D., Professor of Pathology in the University of Cambridge; Fellow of Trinity Hall; Assistant Commissioner on Tuberculosis (1895-1896), etc., and P. C. Varrier-Jones, M.A., M. R. C. S., L. R. C. P. (Lond.), Foundation Scholar, St. John's College, Cambridge; Honorary Medical Officer, Cambridge Tuberculosis Colony; Tuberculosis Officer for the County of Cambridge, etc. With Preface by Sir Clifford Allbut, K. C. B., M. A., M. D., LL. D., D. Sc., F. R. C. P., F. R. S., Regius Professor of Physics in the University of Cambridge. Cambridge: At the University Press, 1920. Pp. ix-151.

THE FORM AND FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM. An Introduction to the Study of Nervous Diseases. By Frederick Tilney, M.D., Ph.D., Professor of Neurology, Columbia University; Attending Neurologist, the Presbyterian Hospital, and the New York Neurological Institute, Consulting Neurologist, Roosevelt Hospital, New York, and Henry Alsop Riley, A.M., M.D., Associate in Neurology, Columbia University, Associate Attending Neurologist, New York Neurological Institute; Attending Physician Neurological Department, Vanderbilt Clinic, New York. Foreword by George S. Huntington, Sc.D., M.D., Professor of Anatomy Columbia University. 591 Figures Containing 763 Illustrations of which 56 are Colored. New York: Paul B. Hoeber, 1921. Pp. xxiv-1020.

PRACTICAL TUBERCULOSIS. A Book for the General Practitioner and Those Interested in Tuberculosis. By Herbert F. Gammons, M. D., Superintendent, Woodlawn Sanatorium, Dallas, Tex.; Assistant Instructor in Clinical Medicine, Baylor Medical College, Dallas, Tex.; Formerly Resident Physician, Culis Consumptives' Home, Dorchester, Mass.; Assistant Physician, Massachusetts State Sanatorium, Rutland, Mass.; Assistant Superintendent, Connecticut State Sanatorium, Meriden, Conn.; First Assistant Physician, Texas State Tuberculosis Sanatorium, Carlsbad, Tex., and Superintendent, Deerwood, Sanatorium, Deerwood, Minn. Introduction by J. B. McKnight, M. D., Superintendent and Medical Director, Texas State Tuberculosis Sanatorium, Carlsbad, Tex. St. Louis: C. V. Mosby Company, 1921. Pp. 158.

THE PRACTICAL MEDICINE SERIES. Comprising Eight Volumes on the Year's Progress in Medicine and Surgery. Under the General Editorial Charge of Charles L. Mix, A. M., M. D., Professor of Physical Diagnosis in the Northwestern University Medical School. Volume IV: Pediatrics. Edited by Isaac A. Abt, M.D., Professor of Pediatrics Northwestern University Medical School; Attending Physician, Michael Reese Hospital. With the Collaboration of A. Levinson, M. D., Associate Pediatrician, Michael Reese Hospital. Orthopedic Surgery, Edited by Edwin W. Ryerson, M. D., Associate Professor of Surgery (Orthopedic), Rush Medical College; Professor of Orthopedic Surgery, Chicago Polyclinic; Attending Orthopedic Surgeon, Presbyterian and Children's Memorial Hospitals and the Home for Destitute and Crippled Children. With the Collaboration of Robert O. Ritter, M. D., Associate Attending Orthopedic Surgeon, Children's Memorial Hospital. Series 1920. Chicago: The Year Book Publishers, 1920. Pp. 256.

Practical Therapeutics

THE USE OF PERTUSSIS VACCINE.*

By Paul Luttinger, M. D.,
New York,
Adjunct Pediatrist and Chief of Clinic, Bronx Hospital and Dispensary.

With the more extensive use of pertussis vaccine in the prophylaxis and treatment of whooping cough, one often hears of isolated cases which respond little or not at all to vaccine treatment. Such failures are usually due to either the vaccine itself, the inexperience of the physician as to the proper dose and administration, or to constitutional inability of some patients to respond to vaccine stimulation.

THE PROPERTIES OF AN EFFICIENT PERTUSSIS VACCINE.

The first requisite of a proper pertussis vaccine is that it contain the Bordet-Gengou bacillus, obtained from a pure culture and suitably suspended in physiological salt solution. One should, therefore, order pertussis vaccine from responsible firms only, and especially from those which have gained a reputation in the manufacture of biological products and employ trustworthy bacteriologists. Most of the large drug concerns may be depended upon in this respect, the only drawback of some being the relatively small dose which they dispense.

Whenever possible, an autogenous vaccine should be used, but the majority of the profession use polyvalent stock vaccine. Adults who often suffer from mixed infections may receive mixed vaccines containing also the Bacillus influenzæ, the Micrococcus catarrhalis, etc. It is of prime importance to secure a vaccine that is fresh. There is abundant clinical as well as laboratory data indicating that the Bordet-Gengou bacillus loses its immunizing properties after remaining suspended in salt solution too long. Whether this partial loss of potency is due to autolysis of the dead bacteria or to some other cause has not been ascertained, but it was found that the fresher the vaccine the more striking the results obtainable. Physicians should insist on getting pertussis vaccine that is not older than one month. A fresh vaccine, diluted in the proportion of one billion killed bacteria to each mil of saline, should appear as a slightly translucent suspension without any precipitate. In case there is a sediment, it should easily dissolve on shaking, without leaving any clumps. The vaccine vial, like all bacterins, should be kept in the ice chest (but not on ice) until used.

METHOD OF ADMINISTRATION, DOSE, AND INTERVALS.

Pertussis vaccine is administered subcutaneously with an ordinary hypodermic needle and syringe. For the larger doses a ten mil glass syringe must be used. The skin is cleansed with a piece of absorbent cotton dipped in fifty per cent. alcohol. The injection is usually made over the biceps, late in the afternoon. This precaution enables the patient to sleep during the local reaction, if any develops. Tenderness at the site of inoculation is usually relieved by the application of a cold compress of boric acid or fifty per cent. alcohol. Local and general reactions are rare, but their appearance seems to influence favorably the course of treatment.

The doses are relatively high. A child, one year old, should receive five hundred million bacteria as the initial dose. Forty-eight hours later a second dose of one billion is given, and after another lapse of forty-eight hours a third injection of two billion is administered. These three doses are usually sufficient for prophylactic cases in which no symptoms of any cough whatever are found. For therapeutic purposes it may be necessary to give another series of three injections after an interval of from three to four days. The dose of these injections is four billion, eight billion, and ten billion, respectively, given every day. It is rarely necessary to give more than six injections. The dose which I am advocating is considerably higher than that put up by some of the commercial houses, but any required dose will be put up by a firm upon request.

Vaccines should be administered as early as possible, and no case, no matter how old, should be deprived of the benefits of vaccine therapy. Some of these cases that drag on for months and months are often surprisingly benefited by a few stiff doses of pertussis vaccine. When fresh vaccine is administered in large doses and at the proper intervals, it brings positive results in the majority of cases. Failure is usually due either to inert vaccines, small doses, or irregular administration. Often lack of success is due to intramuscular instead of subcutaneous inoculation, and finally to lack of proper hygienic surroundings.

Children suffering from whooping cough should be kept constantly in the fresh air and on a bland diet. Frequent feedings, as often as every hour, consisting of a tablespoonful or two of some easily digested semisolid food, keep up the nourishment of the body, seriously interfered with by the frequent vomiting spells. However, in spite of all care there still remain a certain number of patients who for some unknown reason fail to respond to vaccine stimulation. Hospital patients, especially, are prone to show idiosyncrasies in this respect. Whether this apparent refraction is due merely to undernourishment or to constitutional defects is not quite clear. There is no doubt that the frequency and number of complications which develop in hospital patients during an attack of whooping cough are notorious. The fact that only the very serious cases find their way to the hospital probably has a good deal to do with the high mortality of institutional patients.

It is unfortunate that most physicians have not as yet realized the dangers of whooping cough in the community. There were six hundred and fifteen deaths from pertussis in the city of New York in 1920, and while the city authorities raise a howl when a case of smallpox or leprosy is reported, they do almost nothing to prevent infants from dying of pertussis. Other cities have long ago established whooping cough clinics, where the vaccine is administered as a routine measure. In the September number of the *Bulletin of the Detroit Department of Health,* Dr. Worth Ross reports the existence of three pertussis clinics in that city. Speaking from an experience of over three thousand cases treated during the last four years, he highly recommends pertussis vaccine as the only prophylactic and curative agent we have. Our own Department of Health would do well to imitate the example of the more progressive cities. It is surely as important to save a baby from pertussis pneumonia and death as it is to ascertain whether it responds to the Schick test or not.

---

*Read before the Clinical Society of the Bronx Hospital and Dispensary, January 10, 1921.

CONCLUSIONS.

In order to obtain successful results in the treatment of whooping cough with vaccines, one must secure the following:

1. A fresh Bordet-Gengou bacillus vaccine, from a reliable laboratory.
2. Relatively high doses should be administered, subcutaneously, at regular intervals and as long as the whoop persists.
3. Strict attention to hygiene and feeding so as to insure a maximum of response to vaccine stimulation.
4. The establishment of special whooping cough clinics by the Department of Health, where the vaccine treatment would be accessible to all.

1173 WASHINGTON AVENUE.

RATIONALIZING THE TREATMENT OF CHRONIC DISEASES.*

BY N. PHILIP NORMAN, M. D.,
New York.

I believe that all diseases, with the possible exception of tumors, are the result of bacterial activity. In many instances we are unable to demonstrate the organism which elaborates the foreign toxic substances and produces the disease, but this is due to our limitations rather than to the absence of the organism. Malaria, yellow fever, typhoid fever, syphilis, gonorrhea, meningitis, the pneumonias, diphtheria, and tuberculosis, were formerly ascribed to other causes before we demonstrated the relation of a specific organism with their occurrence.

Our most brilliant advances in the etiology of disease has been made in the acute form undoubtedly due to the emergency element present in this form of disease. Our conceptions of acute diseases have changed to a remarkable degree, especially from a therapeutic viewpoint. They are regarded as preventable and we strive more to limit their occurrence than to cure them, although a knowledge of their etiology has enabled us to combat them most successfully.

Advances in chronic diseases, concerning treatment and etiology, has not been as rapid, but is following the well defined precedents established by the work on acute diseases, and we now realize that chronic diseases, such as cardiovascular renal disease, gallbladder disease, rheumatisms, the neuralgias and the neuritides, some forms of neurosis and psychosis, gastrointestinal disease and socalled metabolic diseases, are preventable if the individual is properly supervised from early life to old age. These diseases are all secondary to some foci of infection. If the individual is properly supervised foci of infection will be prevented from forming, or if formed will be immediately eliminated before damage occurs.

Today the scientific medical man is more concerned with the cause of disease than in being able to detect this or that organic lesion and in differentiating the organic from the functional. He is forever seeking the cause of disease. He no longer labels a patient a neurasthenic or a psychasthenic without attempting to find out why he is so. He no longer ponders as to whether a patient has a mitral or aortic lesion without asking himself first what caused the lesion. He is no longer satisfied with giving nauseous bromides for the nervous, and no longer satisfied to saturate and supersaturate the system with digitalis for the cardiac patient, but attempts to locate the cause, remove or correct the cause, and then allow Nature to do her own mending. Drugs have to be resorted to in many instances for temporary relief, but to use them to the exclusion of finding and attacking the cause of disease is poor practice.

As you well know, foci of infection exist without producing the slightest tangible manifestation of their existence. Their sites are usually the teeth, the sinuses, the antra, the tonsils, the gallbladder, the appendix, the prostate, the fallopian tubes, and the colon.

No examination in a case of chronic disease is complete unless all of these sites are scrupulously inspected. It would be elementary to describe the recognized methods in vogue for detecting foci of infection at the usual sites, with but one exception: that exception is the colon. Before taking up this most important infection site, I wish to say that in my conception of the rational treatment of chronic disease all infection sites have been inspected, and if found to be infected were treated by the most modern technic. The special management of the colonic infections is an addition to what is done as a matter of routine by the best men in the country.

The colon is subject to infection, not alone of its contents, but of its tissues. Lane has called attention to kinks and adhesions, and asserted that they produced intestinal stasis and autointoxication syndromes resulted. Hertz states that inflammation of the colonic walls, which he calls catarrhal colitis or pericolitis, creates adhesions and then kinking comes about. Herter, in his monumental work, *Bacterial Infections of the Gastrointestinal Tract,* ascribes autointoxication to bacterial infection of the colonic contents, and mentions inflammation of the colonic mucosa as a secondary consequence.

Undoubtedly the reason for these conclusions lies in the fact that the intestines, particularly the colon, have been practically unstudied because of a natural abhorrence of their contents, and consequently very little is known of their pathology. If inflammation is present there must be infection, as one could not justify the inflammation on mechanical or chemical grounds alone.

---

*Read by invitation before the Elmira, N. Y., Academy of Medicine, December 1, 1920.

Recent advances in the knowledge of intestinal infection seem to establish the fact that the tissues of this organ become infected and that autointoxication is a result of this infection, likewise adhesions, kinks and loculi. The neglect of the colon as an infected area explains to me why we are so often disappointed by the failure of the patient to react after the usual foci have been eliminated.

The organism most often associated with chronic disease and colonic infection is the Bacillus aerogenes capsulatus, commonly called the gas bacillus, which is an anaerobic, spore forming organism with hemolytic properties, capable of living on either carbohydrate or protein residue, and is able to produce gas on either pabulum. As a rule one finds that they have annihilated the helpful organisms of the colon bacillus type, the bifidus group, and the Lactis aerogenes types. They are usually associated with the coccal forms and with the Bacillus putrificus, and in many instances the same type of cocci —the viridans, the hemolyticus and the salivaris, which may be attacking the dental or tonsillar tissues.

In the severe gas bacillus infections it seems that the absence of Bacillus coli explains the slight or negative indican reaction in the urine. In this type a great amount of butyric acid is produced, together with other acids, such as caproic, valeric and prorionic. At times the fatty acids are neutralized by bases which are formed during the course of putrefaction, and this is especially true of ammonia which forms ammonium butyrate in excess.

Ammonium butyrate (1) is a distinct intestinal irritant and produces a diarrheal condition which was formely explained as Nature's effect of ridding the bowel of retained fecal products. This type of infection is particularly hard to deal with, especially from a dietary point of view, for carbohydrates, fruits and proteids are alike attacked, and one may have a fermentative diarrhea or a putrefactive constipation, depending upon the diet. This type of infection has been denominated by Herter as the saccharobutyric type, and in my experience has been the most common type of infection. The mixed type is next most frequent, usually the combination of aerogenes capsulatus and colon bacilli, with butyric acid formation and with indol production and indicanuria. The third type, the indolic type, is usually dominated by colon bacilli with few aerogenes capsulatus bacilli which appear nonactive and with a heavy indol production.

My own theory is that at first the type of infection is usually of the indolic type, which later merges into the saccharobutyric or mixed type. I shall give you my reasons for this belief. In the stools of healthy children or adults we find aerogenes capsulatus, few in numbers, nonactive, or in their sporulated state. Why is it that these organisms appear dormant at this time and in later life appear to be so active? I believe that the colonic cavity, when healthy, contains a certain amount of free oxygen liberated from the blood stream through the superficial capillaries of the mucosa, much after the fashion of what occurs in the lungs, and that some intestinal gases are absorbed. This is to my mind the source of free oxygen in the colonic cavity. That the colon will absorb gases is unquestioned, for every surgeon who has used rectal anesthesia knows that the body heat volatilizes the ether into a vapor and the vapor is absorbed directly into the blood stream.

The presence of oxygen prevents the growth of the Bacillus aerogenes capsulatus. However, if for any reason the integrity of the colonic mucosa is disturbed, as by food poisons or by direct infection, there occurs a hyperplasia of the mucosa which prevents or materially inhibits the normal interchange of gases and an aerobic area has been established which is favorable to the growth of the anaerobic gas bacillus. I know of no other way to explain the anaerobic condition of the colon in chronic disease. And again, in the young, the healthy adult, the normal color of the feces is a golden yellow. In chronic disease this color changes to a brownish or even a dark brown or light black color. In my work I have changed the color of the feces from an abnormal to a normal by daily instillation of some chemical which will liberate free oxygen, suggesting that the yellow color depends upon the proper oxidation of the fecal contents. And again the laboratory picture of a stool, first anaerobic with many gas bacilli in a nonsporulated state, is changed to the sporulated state with a marked diminution in numbers by using solutions which liberate free oxygen.

This is my theory of explaining why the gas bacillus so predominates in the stool examination of the chronic sufferer. I hope to be able to prove it in the laboratory beyond doubt if it is the correct one. Assuming that I am correct in my deductions and that one has to deal chiefly with the saccharobutyric type of infection, or the mixed type, and that these infections occur in all cases of chronic disease, it becomes apparent that the colon is an area of infection which must not be neglected if we are to attain the utmost benefit from our modern therapeutics. After eliminating or excluding the other foci, we begin on the colon and treat it as an infected area. It is a well known fact and an established precedent that an infected area must be drained. Drainage accomplishes four things: it removes necrotic tissue, the harmful organisms, and their products, and creates an unfavorable soil for their growth.

Drainage of the colon is effected by washing it out, which removes its infected contents and allows its infected walls to drain freely. When this has been accomplished we create within the colon an environment unfavorable to the growth of pathogenic bacteria.

Briefly described, the technic of this method is as follows: First determine the type of infection with which you have to deal. This is done by the following technic: Suspend 150 grams of the feces in 200 c. c. of sterile distilled water; shake thoroughly in a litre flask. For culture 0.1 c. c. of the emulsion is put into each of four fermentation tubes containing glucose, saccharose, lactose and lactose bile media, and these tubes are incubated for twenty-four hours and the amount of gas produced is noted. Gram and capsule stains are made upon the sediment and fluid of each tube. If streptococci are found in the stained films the fluid of the fermentation tubes are subcultured upon blood agar plates.

Another tube containing sterile milk is inoculated with 0.1 c. c. of the emulsion and is heated at 80° C. for the determination of the Bacillus aerogenes capsulatus. This tube is then incubated for twenty-four hours, and the size and amount of curd noted, and also the amount of gas production. Stained films are then made. Stained films of the emulsion are made for the determination of blood, pus, cells, meat fibre, vegetable fibres, starch, fat, and crystals. The color, the consistency, the odor, the reaction, the admixture of gas and the type of predominating bacteria determine the presence of fermentation or putrefaction. Of particular importance are the odor and bacteria.

The flask is then heated and the distillate tested for indol and skatol, according to the technic, which is too lengthy to discuss and which has not been accurately standardized. The residue left in the flask is then heated and tested for blood by the benzidin reaction. The heated feces is used because the heat destroys any oxidase ferments which might give a false reaction for blood. The reaction of the stool is determined by the hydrogen ion titration method, described by Clark and Lubs, for culture media, and adapted to the titration of feces. Ova are examined for by concentration of the suspension by centrifuge or the brine method. Bile pigments are determined according to the bichloride method. This technic is the one which has been elaborated by Dr. A. A. Eggstein, director of the Manhattan Eye and Ear laboratories, who has been a constant aid to me in the development of this work, and whose assistance is acknowledged with many thanks.

Determine any anatomical abnormality of the colon by inspection, palpation, percussion, auscultation, proctoscopic and sigmoidoscopic examination, and later when irrigating by the sense of touch which one acquires from passing the colon tube. A soft rubber tube from three fourths to seven eighths of an inch in diameter and thirty-three to forty-four inches long is used. This tube may be of the Lockwood design or of my own design.

Two percolating jars, one of three gallon and the other of one gallon capacity, are needed. They are suspended about two feet above the level of the anus. These jars are arranged so that either one may be cut off and both flow through a three way valve, which, in one position, allows of the flow of water from the jar into the patient's colon, and, when in another position, cuts off the flow of water from the jar and allows of the siphonage of the water from the patient to the waste jar. I begin first with Dakin's solution, prepared from hychlorite, and pass the tube as far as possible, then siphon out all the solution possible, and instil a quart of hot one in five hundred or one in one thousand potassium permanganate solution. While doing this, by tilting the table to about a twenty degree angle, with the patient's head depressed, one may palpate and auscultate the fluid running through the transverse colon to the cecum. The patient is allowed to arise and expel the contents. Daily washings are given until the feces become a yellow color, and the bacteriological picture shows an improvement. When this occurs we are ready to plant. We plant by introducing into the colon fresh, live cultures of the bulgarian and acidophilus with a large quantity of sugar of milk, which is excellent food for their growth. These bacilli secrete lactic acid and thus create an environment unfavorable for the growth of the pathogenic organisms. In addition to this they are healing to the inflamed mucosa. The cultures are kept up until the patient has reacted favorably, when the bulgaricus is dropped from the culture, the acidophilus being planted until the stool examination assures us of the permanency of its growth.

When the patient's alimentary tract has been thoroughly disinfected, and granting that the possibilities of a syphilitic or gonorrheal infection has been eliminated, it becomes logical to assume that the patient has been given every chance for a rapid recovery. The value of the whole therapeutic idea is that we have eliminated the cause, and leave to Nature the restoration of the damage which has been inflicted.

Understand, however, that I do not assert that drainage of the colon alone will be productive of results, or that the gas bacillus is the specific organism associated with all forms of chronic disease. What I do assert is that no case of chronic disease has been adequately treated unless the colon has been thoroughly investigated and infection of this vast area excluded.

Still another point is this: No nurse or attendant can be trained to pass a colon tube. It is difficult enough for a physician who has a knowledge of the possible anatomical deformities of the colon, as well as a comprehensive knowledge of infection and how to combat it. Anyone attempting to direct a nurse to pass a colon tube is as unwise as a surgeon who would attempt to direct a nurse to enucleate tonsils or curette a uterus, for with all the surgeon's skill he is likely to fail in either instance, and in the nurse's case, she will fail in every instance with the tonsils, the uterus, or to pass the tube; and so would the physician in many instances if he tried it (the tube). I have passed many tubes, and in many instances the problem is complex and baffling, and the ultimate result depends upon one's ingenuity and knowledge of the anatomical abnormality present.

REFERENCES.

1. Herter: *Bacterial Infections of Gastrointestinal Tract,* Macmillan & Co., 1907.

265 West Seventy-second Street.

Diet in Typhoid Fever.—Antonio Duque (*La Medicina Ibera,* April 24, 1920) finds that the main objection to a milk diet in typhoid is the resulting meteorism which is often troublesome and persistent until a mixed diet is resorted to. He considers that the diet of choice in these cases is a mixed one of purees, eggs and fruits, which is contraindicated only in exceptional cases.

Operative Treatment of Infantile Paralysis.—Robert W. Lovett (*Surgery, Gynecology and Obstetrics,* January, 1921) states that the greatest defect is in not realizing that operation must always be directed to securing better function, and that function can only be studied by taking the case as a whole and analyzing it to see where function is defective and how it can be improved. It may be that mechanical treatment will offer the best hope in the individual case; if so, it should be used. If operation can effect improvement it should be done; often both operative and mechanical treatment will be desirable. The function of the lower extremity is walking, and improvement in walking cannot be brought about by operative measures which do not attack the chief factor of the lameness. In the upper extremity the hand must be able to grasp and the shoulder to be moved on the body to justify operation. In the absence of either one of these no good function will result from operation.

Having made the analysis of function, the salient features of the case should be picked out, and if there is a reasonable prospect of relief by operation, then the operation should be performed promptly, and the two year period of waiting is not necessary in all cases. I should deprecate especially the performance of serious structural operations upon the foot when the chief cause of the limp lies in the muscles of the hip and abdomen. These operations may well be necessary, and if so, should be performed, but not with the expectation of remedying a limp of which they are not the cause.

If the operative aspect of infantile paralysis is approached from this functional point of view, we will operate more intelligently, more radically, and more fearlessly, but will leave undone a good many operations which at present are done without a sufficiently detailed study of the case, or a sufficient reflection on how much improvement in function is really going to be effected by the proposed operation.

Treatment of Urinary Calculus.—J. O. Thompson (*Surgery, Gynecology and Obstetrics,* January, 1921), from a study based upon 3,500 operations, states that in deciding upon the operation to be performed it is necessary to take into consideration the general condition of the patient, the age and the condition of the urinary tract, also the size, consistency and mobility of the stone.

For the general surgeon, with a comparatively small experience in stone work, cystotomy should undoubtedly be the operation of choice in most cases. It can be performed rapidly and with safety. The whole operative field is visible. Peritonitis can be avoided by careful retraction of the peritoneal reflection, and in the case of a large calculus by fracturing or crushing it prior to extraction. There is but little probability of recurrence. It is the operation of necessity with a large, hard stone or abnormality or disease of the urethra, prostate, or bladder. The operative mortality in three hundred and fifty unselected cases was seven and eight tenths per cent., or, excluding the earlier cases in which it was the operation of last resort and the cases in which there was preexisting or concomitant disease, three per cent.

Perineal section, median for small stones, and lateral for larger, can be performed most rapidly, gives excellent drainage for cystitis, and is the operation of choice for medium sized stones impacted in the prostatic urethra. The dangers are hemorrhage, laceration of the rectum and fistula; sterility and stricture are possibilities, but rarely seen. Before puberty the bladder is small and more of an abdominal organ, so that it is more difficult to find and retain it through the perineal route than through the suprapubic. Recurrences are rare. The mortality in 1,990 cases was seven and nine tenths per cent., or in the uncomplicated cases, three and eight tenths per cent.

Litholapaxy is preferred by probably the majority of urologists. A large practice is necessary in order to acquire skill. It is indicated in adults, with a healthy bladder and normal prostate and urethra, for calculi of small or medium size and hardness (uric acid or urates). It is contraindicated in large and hard or soft stones, encysted calculi, cystitis, abnormality or disease of the prostate or urethra. It requires time. Drainage may not be satisfactory, the bruising of the urethra may cause urinary fever, cystitis may follow, or the bladder may be ruptured. Recurrence is more frequent than in the other types of operation. The mortality in 384 cases of lithotrity and litholapaxy (330 cases by litholapaxy) was nine per cent., uncomplicated four and four tenths per cent.

Personal preference, experience and skill, and selection of cases will account for favorable statistics in almost any variety of operation. In females a small calculus may be extracted *per urethram,* or crushed and evacuated. Primary union may be expected after suprapubic lithotomy if the bladder is closed. Vaginal cystotomy should only be performed as a last resort.

Urethral stones, if near the meatus, should be extracted; if in the membranous or prostatic urethra, should be pushed back into the bladder and dealt with as a vesical calculus. A stone impacted in the penile urethra, which would lacerate the organ were it roughly dragged out, should be removed by urethrotomy. The bladder should always be sounded, cystoscoped, or x rayed for possible vesical stones.

Technic of Reamputation.—Alan H. Todd (*British Journal of Surgery,* July, 1920) states that the technic of reamputation should be standardized. The form of the stump must be determined partly by the kind of artificial limb that is afterwards to be fitted, and partly by consideration of the functional utility of the limb as a whole. The tenderness is the outcome of chronic inflammation in the stump; this not only gives rise to osteitis and fibroneuroma, but also to pain in all the remaining tissues of the stump. To secure a good result after a reamputation, it is essential that the wound should follow practically an aseptic course, and the only way to ensure this is altogether to avoid cutting into a zone of sepsis or latent sepsis. The best and easiest method consists in the excision of a conical piece of the end of the stump *en bloc,* without any dissection whatsoever. The cut passes through tissues which are practically normal, and heals by primary intention.

Bone Grafting.—John B. Walker (*Annals of Surgery,* January, 1921), in a study of cases operated on, concludes that in order to obtain the best results sufficient time must be allowed to elapse between the injury and the operation for the complete subsidence of the original infection, and the figures show a more favorable recovery has followed the late rather than the early operation; that is to say, over rather than under two hundred days after injury. It is reasonably safe to operate during the fourth month after complete healing has occurred.

Grafts, autogenous, taken from the tibia, have proved the most efficient material for bone grafting for fractures of the long bones, on account of its characteristic strength. They are best made with the saw and exact coaptation of parts of the graft to respective parts of the host bone must be secured.

While many of these records are as yet too incomplete to give the final end results, yet sufficient evidence has been secured to prove that bone grafting is the most efficient method for nonunion of fractures, and very favorable results can be obtained in the largest proportion of cases.

Induction of Cholecystitis.—F. C. Mann (*Annals of Surgery,* January, 1921) states that it has been found that the intravenous injection of a solution of chlorinated soda in dogs produces a definite reaction of the gallbladder in a high percentage of experiments. The reaction consists of a breaking down of the capillaries and infiltration of the wall of the gallbladder with blood.

To produce the reaction in the gallbladder it is necessary to inject relatively large amounts of the solution, at least more than five c. c. for each kilogram. The reaction takes place very shortly after the injection, and is completed within the first twelve to twenty-four hours.

The reaction is undoubtedly produced by some chemical in the solution; chlorin is suggested as the probable substance. All solutions, however, even though their chlorin content may be practically the same, do not give the same percentage of gallbladder reactions; it would thus appear that a factor other than the chlorin content was involved.

The solution reaches the gallbladder through the blood stream and a gallbladder in which the blood supply, particularly that coming from the liver, is generous, develops the most marked reaction. In some instances a definite chronic condition has followed the acute condition.

The Early Orthopedic Treatment of Infantile Paralysis.—Arthur T. Legg (*Boston Medical and Surgical Journal,* November 25, 1920) says that every parent will ask, during the convalescent stage, as to what will be the outcome. If we are honest we must admit that we can tell but very little. As to the outcome of muscles completely paralyzed, we can say absolutely nothing. Where there is some power, we may say truthfully that there will be gain in power under skilled treatment. How much this will be it is impossible to say. During the sensitive stage the patient should be at perfect rest. No active treatment should be started until tenderness has entirely disappeared. All beginning deformities should be corrected as soon as they appear. An accurate muscle examination of the entire body should be made before starting any treatment. Sitting and walking should be prohibited for two or three months at least, and then allowed only when the patient can be kept in a normal position. Braces should be applied to prevent deformity and to allow locomotion. Fatigue must be constantly guarded against. Massage and muscle training is our best method to reestablish power.

Duodenal Diverticula.—Edmund I. Spriggs (*British Journal of Surgery,* July, 1920) presents ten cases of single diverticulum of the duodenum, discovered in the course of over a thousand x ray examinations of the alimentary tract which are reported, with radiographs. Five were in the second and five in the third part of the duodenum. One case was observed at operation. In two of the others the duodenum had been examined by a surgeon, but the diverticulum had not been detected. The shadows of duodenal diverticula may cause confusion at the x ray examination. In nine of these cases the symptoms were not connected with the diverticula. In one case, still under observation, the point is doubtful. The literature shows that such diverticula have, though but rarely, been the cause of disease.

Treatment of Inoperable Cancer with Selenium.—E. Watson Williams (*British Journal of Surgery,* July, 1920) states that one may justly conclude that the injection of colloidal selenium has established a definite claim for consideration in certain cases as a therapeutic measure. In a class of patients whose outlook has till recently been almost hopeless, a very considerable degree of benefit may be expected. Pain, sleeplessness, ulceration, and discharge are markedly diminished. In favorable cases a fair degree of comfort is attained (several returned to work). In a few cases the degree of relief comes within measurable distance of a cure.

Tibial Tubercle Affections.—Richmond Stephens (*Annals of Surgery,* January, 1921) states that:

1. Affections of the tibial tubercle are seen frequently during the period of adolescence, especially in males, but occasionally in adults.
2. They are inflammatory, nonsuppurative, and due to injury.
3. The disability is rarely complete, and the prognosis is good.
4. The treatment should be rest, protection, and sometimes immobilization. Operation is only indicated in exceptionally protracted cases.

Treatment of the Common Cold with Bacterial Vaccines.—Cleaveland Floyd (*Boston Medical and Surgical Journal,* April 15, 1920) says that the results of many recent observations point to the predominant place of members of the streptococcus and pneumococcus groups in the etiology of infections of the upper respiratory tract. The production of an active immunity through the use of appropriate bacterial vaccines promises to be of value prophylactically in the control of infections of the upper air passages.

Proceedings of Societies

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-fifth Annual Meeting, Held in Atlantic City, N. J., May 4 and 5, 1920.

The President, Dr. HERMAN M. BIGGS, of New York, in the Chair.

Presidential Address.—Dr. HERMAN M. BIGGS deplored the loss to the society of such men as Sir William Osler, Dr. Abraham Jacobi, Professor H. C. Wood, and Dr. E. E. Southard. He chose as the subject of his address the status of medical practice in rural communities, and mentioned the acute need of hospital and laboratory facilities and of high class medical men. This occasioned a widespread demand for health insurance, which, however, he said, would have a detrimental influence on medicine. It seemed inevitable that health authorities should enlarge the scope of their work. A great shortage of physicians existed throughout the country. Men tended to congregate in the larger cities, and higher requirements in medical schools had reduced the students by fifty per cent. The supply of nurses was inadequate, and the increase in the cost and maintenance of hospitals had made an increase in their number impossible. There was a shortage of from fifteen to fifty per cent. in the number of hospital interns. In rural communities the men averaged twenty-eight years of practice, as seen in one community of fifty-four physicians. It would seem necessary that the government should introduce a scheme by which rural communities might be aided to provide facilities, the richer communities contributing their quota toward their support. Such a bill Dr. Biggs had recently introduced into the legislature, and it had met with warm support from all classes. Sufficient time had not been given to its discussion, but favorable consideration seemed likely.

Studies of the Acid Base Equilibrium in Disease from the Point of View of Blood Cases.—J. H. MEANS and A. V. BOCK, of St. Louis, said that L. H. Henderson had shown that the acid base equilibrium of the blood was dependent chiefly upon the ratio of dissolved carbonic acid to bicarbonate. Haggard and Yandell Henderson had put these relationships into graphic form, in what they called the carbon dioxide diagram of the blood. This diagram consisted essentially in the plotting of the carbon dioxide dissociation curve of the blood with a mark upon the curve at the point at which the coordinate representing the arterial carbon dioxide tension intersected it. This point was called the arterial, or A, point. A straight line, called the O C line, drawn through the zero and A points of the normal blood, represented the normal hydrogen ion concentration. The diagram thus demonstrated not only the presence of acid in the blood, as shown by the level of the dissociation curve, but also whether any change in hydrogen ion concentration had occurred as shown by the position of the A point. This diagram furnished a comprehensive means of interpreting disturbance of acid base equilibrium. In some cases it would seem that there might be a condition of carbonic acidosis, due to insufficient pulmonary ventilation.

Dr. C. F. HOOVER, of Cleveland, said that in the anoxemia of pneumonia, the giving of pure oxygen would not move the cyanosis which was caused by alveolar edema. The carbon dioxide was not modified at all. They could compensate for the carbon dioxide, but not for the anoxemia. Dr. Bock said the patients could not get rid of the carbon dioxide by the respiration.

Refinement in Methods of Auscultation of the Lungs by Electrical Means.—Dr. W. CHARLES WHITE and Dr. L. O. GRONDAHL presented a paper on this subject, in which they said that normal and abnormal lungs were studied in regard to sound producers, sound conductors, sound receivers. Modification could be obtained of the first and third, but not of the second. Sound producers were the inspiratory and expiratory mechanism, the voice, percussion, râles, friction sounds. The recorder had hitherto been the human ear, which was fatigable. The body tissues acted as conductors. Efforts to make a permanent and stable recorder were carried out in the pneumophysical laboratory. The work was recorded on charts. Fairly constant results were obtained, but interpretation of all sound was not arrived at. A wide difference between tracheal, bronchial and vesicular murmurs was noted. The colon, liver, heart and lung percussion tones were differentiated. The apparatus consisted of a telephone transformer and amplifier, used in conjunction with a string galvanometer. The amplifier had the disadvantage of amplifying all sounds alike. It was found that the resonant lung and the dull lung gave totally different records.

Observations on Chronic Arthritis. — Dr. GEORGE DRAPER, of New York, said that the idea that the external appearance of the patient was in some way related to his tendency to contract certain diseases was worked out in a study of persons with the arthritic complex. This was most frequently found in women, and bore definite relation to menstrual irregularities and to pregnancy. The patients often presented skeletal characteristics suggesting acromegaly. The blood picture was also suggestive. These cases, the pulmonary osteoarthropathies, were related to chronic bronchitis and asthma. Nervous fatigue, hives and urticaria were included in the syndrome. Sugar tolerance was disturbed. Very likely a pituitary influence was at work, and sometimes thyroid unbalance. Evidently chronic arthritis represented a profound constitutional disturbance. A case report was given of remarkable results from bee sting therapy, which emphasized the importance of protein shock in this group of diseases of the pulmonary arthropathic type.

Dr. Emanuel Libman, of New York, in discussing the subject, said that no doubt the disease attacked the joints because of previously disturbed endocrine balance. One became accustomed to associate certain diseases with patients of a certain type. This had a bearing on drug idiosyncrasies, and the appearance of the patient suggested what idiosyncrasy he would present.

Dr. G. Canby Robinson, of St. Louis, said that he had noted very strong reaction to hornet stings, and this was no doubt some form of anaphylaxis.

Dr. H. A. Christian, of Boston, said that in asthma there was inherited sensitization to one form of protein or another. In arthritis the general principles of inheritance seemed to conform to the Mendelian law.

Dr. H. Koplik, of New York, said that in children many who suffered from asthma had eczema. An attack of eczema would relieve the asthma. The reaction appeared selective.

Dr. S. Solis-Cohen, of Philadelphia, said that a familial tendency to certain disturbances of the autonomic nervous system and the endocrine glands might manifest itself in different groups, in different families, and in different members of the same family, and in one individual at different periods of time and under differing conditions. Cases should be studied from the point of hereditary liability and the particular exciting cause. Osler had discussed horse asthma, hay fever, pseudoappendicitis angiospasms, in a group of persons with a tendency to metabolic disturbance, and with insufficient carbohydrate and fat metabolism.

Dr. Llewellys F. Barker, of Baltimore, said that Dr. Draper had tried to correlate disposition to infection, with the effects of infection. One must differentiate between the liability to infection by means of constitutional peculiarity, and the modification of endocrine constitution after infection had occurred. In other words, how much disturbance preceded infection, and how much was secondary to it.

Dr. George Draper, in closing the discussion, said that bee stings about the head were dangerous, but apparently harmless in other parts. In asthmatic cases there was pituitary influence; in skin cases, probably adrenal.

Effect of Blood Pressure and Blood Nitrogen on the Ingestion of Large Amounts of Fluid.—Dr. Joseph L. Miller, of Chicago, said that large amounts of fluid were given to patients to measure the effect on nonprotein nitrogen. Two and a half litres were given every three hours by the Rehfuss tube, till hydremia was produced. The blood nitrogen was then determined. A steady rise of blood pressure and weight was observed; in one man from 160 to 280 blood pressure, and from 124 to 142 pounds in weight. Uric acid was found to be reduced by fifty per cent., but in none of the patients did the excess of fluid have any effect on the nonprotein nitrogen. In one patient large amounts of water were passed, and the blood pressure was not affected.

Dr. F. M. Allen, of New York, said that in some cases water drinking sent up the tension. If water was eliminated rapidly the tension would not go up. By giving the patients salt one could send up the tension. In some cases there was great lag of excretion and the patient became edematous. With increased excretion chloride was washed out and blood pressure fell.

Dr. E. P. Joslin, of Boston, said that with the usual quantity of liquid drunk metabolism was little changed; with a large quantity it was affected.

Acute Psychoses in Diseases of the Heart.—Dr. David Riesman, of Philadelphia, read a paper on this subject, in which he said that heart disease sometimes produced sudden and acute psychoses. These might be hallucinations, confusional states, acute mania or delusions, especially those of persecution. The patient often saw faces, or smelt strange odors. It should be explained to the patient that these illusions were the result of cerebral anemia. In cases of pericarditis, acute mania occasionally occurred. Pericarditis should be looked for in sudden attacks of acute mania. The association was sometimes accidental, but often heart disease was the causative factor.

Rebreathing and Ergometer Determinations as a Method of Estimating Cardiac Efficiency.—Dr. Alfred Stengel, Dr. C. C. Wolfreth and Dr. L. Jonas, of Philadelphia, presented this paper. The rebreathing apparatus of Henderson was used and anoxemia was produced in the subjects. The object was to test cardiac efficiency. Henderson asserted that compensation for exertion was brought about by increase in respiratory work and increase in circulation. Haldane did not think these compensated for lack of oxygen. Opinions were conflicting. The authors used a bicycle ergometer, with six thousand foot pounds of work, and a Douglas bag for respiration. The results on anoxemia were unsatisfactory. On the whole the studies pointed to the fact that circulation was the important factor.

Effects on Cats of Digitalis Lutea and Digitalis Thapsi.—Dr. R. E. Morris and Dr. S. Marx White reported the effects on cats of intravenous injections of digitalis. Of the three digitalis methods, the fron method, the guineapig method, and the cat method, the latter was used for testing the thapsi preparation. There were wide variations in the percentages of the lethal dose. The changes were comparable with those produced by other species of digitalis. Further studies should be made in regard to absorption by the gastrointestinal tract.

The Total Metabolism in Diabetes.—Dr. E. P. Joslin, of Boston, said that metabolism estimations must be made with due regard to the height, weight, age and sex of the individual. With each year of life it decreased by seven calories. Woman had a metabolic rate six per cent. lower than that of man. In diabetes metabolism might be above or below normal. The studies of diabetes since 1914, when Dr. Allen started his metabolism experiments, were on an entirely different basis than those made before that time. The new methods showed increase of life, due to wiping out diabetic accidents.

Dr. F. M. Allen, of New York, in discussing the subject, said that the diabetic patient must accept his lowered metabolism. If he did not drive his renal function he could hope to live indefinitely.

Effect of Protein Food on Increased Blood Pressure.—Dr. Herman O. Mosenthal, of New York, said that the evidence supporting the theory of restriction of protein in high blood pressure was found to have little basis in fact. Diets were studied: First, a low protein diet, with no meat or fish, and, second, a diet with meat, fish, and extractives. No difference in blood pressure was noted after feeding the patient a high protein diet. In one case, with contracted kidney and functional impairment, the blood pressure fell with low protein diet. The conclusions were that in the majority of cases there was no effect on the blood pressure from either high or low protein feeding. The effects obtained were influenced by mental and physical rest, and were not fundamentally associated with diet. Benedict's subcaloric diet lowered blood pressure in normal individuals.

Chemical Studies on Edema.—Dr. Frederick M. Allen, of New York, and Dr. J. W. Sherrill performed analyses for urea, creatinine, chloride, bicarbonates, sugar, and sometimes acetone, upon over forty exudates from various parts of the body in various conditions, chiefly nephritic edema and the bicarbonate edema of diabetics. No distinctive differences were found among the cases. The chief general characteristic was that the concentration of the inorganic constituents was higher in the exudate than in the blood plasma, so that the fluid accumulation seemed to correspond to osmotic laws, irrespective of the clinical condition producing it. The relations of the organic substances were variable, but the distribution of all of them between blood and exudate was always unequal. On feeding various substances, the concentration of all constituents in the blood was much more easily and quickly altered than that in the exudate. Lowering the plasma bicarbonate by exercise or forced breathing did not increase the bicarbonate in edema fluid. The fullest study was made upon a young man with heavy albuminuria and casts, good renal function as tested for urea, chlorides and phenolsulphonephthalein, and marked edema which resisted all diet restrictions. The chemical relations between blood and edema fluid resembled those found in cases which responded readily to diet, and also the results of feeding sugar, protein, sodium chloride, sodium bicarbonate and hydrochloric acid were similar. There was a very marked delay in the excretion of administered water, with great dilution of the blood and increase of edema, but the edema still persisted with dry diet which raised the hemoglobin and red cell count above normal. As the edema seemed unexplainable by renal retention, chemical differences, or permeability of membranes, it could be account for hypothetically only by mechanical factors, such as abnormalities in the capillary circulation.

Blood Analysis in Some Ophthalmic Conditions.—Dr. J. W. Sherrill and Dr. Frederick M. Allen said there was a certain notorious frequency of association of certain ocular disorders with certain metabolic disorders, especially of cataract and retinitis with diabetes, nephritis and hypertension. The therapeutic relationship proved that the metabolic trouble was either the primary or the exciting cause of the eye trouble. Thus, diabetic cataract was prevented by proper dietary control of the diabetes, though such treatment did not cure the lens changes after they had begun. Diabetic retinitis could be both prevented by dietetic treatment and arrested after it had begun. Much was also accomplished by diet for the eye troubles of nephritis and high blood pressure. An investigation was therefore naturally suggested into the metabolic state in various ophthalmic disorders in which the etiology had seemed obscure. Reference was made first to seven cases of retinitis occurring as a prominent feature in metabolic disorders (diabetes, nephritis, hypertension, separately or combined) under treatment in the writers' hospital. The study was still incomplete, but a conclusion was warranted that a considerable number of ocular disorders called for metabolic examination and treatment. The principal or only toxin responsible for many cases of retinitis seemed to be common salt. The judgment in any individual case should be based upon accurate tests and not upon a general assumption. Else the diet was a matter requiring skill in both planning and preparation. The patient who was merely directed to avoid salt generally did not succeed in avoiding it to the necessary degree of thoroughness, and in many instances institutional care was necessary for success in the diet treatment.

Experiments with the Influenza Bacillus.—Dr. Russell L. Cecil, of New York, said that in his experiments six healthy volunteers were inoculated in the nose and throat with a strain of Bacillus influenzæ, freshly isolated from a case of clinical influenza. Preliminary cultures showed that only one of the volunteers was a Bacillus influenzæ carrier, and he had never had the disease. Three out of the six volunteers gave a history of influenza during the epidemic of 1918; the other three denied having had influenza at any time, though they admitted frequent exposure. Two of the volunteers received washing from chocolate blood agar slant, culture of Bacillus influenzæ (one half to one slant) in each nostril. Two others received the peritoneal exudate from a monkey with Bacillus influenzæ peritonitis (0.1 c. c.) in each nostril. The last two received a six hour chocolate blood broth culture of Bacillus influenzæ (0.5 c. c.) in each nostril. In five out of the six volunteers definite signs of infection developed, premonitory symptoms appearing four to six hours after inoculation. Headache and general malaise were soon followed by rhinitis, pharyngitis and mild conjunctivitis, and in three instances by tracheitis. Backache was present in two cases; general muscular aching in two. Definite leucopenia was noted in three cases; in the other two the leucocytes were unaffected. There was no fever. Symptoms lasted two to four days, except in one tracheitis case of ten days' duration. The Bacillus influenzæ carrier contracted infection which ran but a mild course. Smears from nasal discharge and from sputum of infected cases showed pus cells and influenza bacilli, sometimes in large numbers. Pure cultures of influenza bacilli were obtained. Influenza bacilli persisted in the secretions for two weeks or more. No pneumonia developed.

Dr. George Kober, of Boston, said that in agriculture there was a great difference in the quality and quantity of crops of vegetables and fruits, which was attributable to meteorological influence. Why should not a similar influence have an effect on unicellular organisms?

Dr. E. C. Rosenow, of Rochester, Minn., said that Dr. Kober's point was interesting. Evidently contact played an important part in the epidemic, but the reason was not known. There was an increase and decrease of virulence of organisms associated with season. The type of reaction in the animal might change completely, though the microbe was the same throughout. It might not be true that pneumonia occurred with the advent of a secondary invader, because the prolongation of resistance might change the organism, so that instead of leucopenia a leucoyctosis was produced.

The Blood Sugar Tolerance Test as an Aid in the Diagnosis of Gastrointestinal Cancer.—Dr. Julius Friedenwald and Dr. George H. Grove said that the great difficulties arising in the diagnosis of gastrointestinal cancer, especially in the early stages, led the authors to make a further study of blood sugar tolerance as an aid in the differential diagnosis between carcinoma and other diseases of the abdominal organs. They followed the plan of administering, after a night's fast, one hundred grams of dextrose, dissolved in three hundred c. c. of black coffee without additional sugar. The blood was withdrawn for examination just before the dextrose was given, and again forty-five minutes and two hours after its administration. The blood sugar tolerance was studied in thirty-two cases of carcinoma of the gastrointestinal tract. In seventeen of these casese operation was performed, and the diagnosis was thus confirmed, while the others were all typical of the disease. In addition blood sugar tolerance tests were made in uterine carcinoma, breast cancer, carcinoma of the prostate, sarcoma, and in many cases of nonmalignant disease of the gastrointestinal tract.

The authors classified the sugar tolerance curves into the following groups: 1, normal curve, in which blood sugar rose not usually above 0.16 per cent. within forty-five minutes, falling gradually within two hours to about the level, as observed in the fasting state; 2, atypical normal curve, found in cases of achylia gastrica, with practically normal blood sugar in the fasting state, ascending to 0.16 to 0.19 per cent. within forty-five minutes of taking the dextrose, falling within two hours to 0.13 per cent., but not lower; 3, intermediate curve in cases of carcinoma (not gastrointestinal) with comparatively high blood sugar, even in the fasting state (0.14 to 0.17), with a rise to 0.20 to 0.23 within forty-five minutes, followed in two hours by a fall to 0.18 to 0.21 per cent., but not to the level of the fasting state; 4, cancer curve found in carcinoma of the gastrointestinal tract, in which, even in the fasting state, was high sugar content (0.14 to 0.17 per cent.), rising after ingestion of dextrose to 0.21 or 0.24 per cent., or higher, within forty-five minutes, remaining at this level for about two hours, and at no time did the reading fall below 0.20 per cent.

Conclusions: 1. In carcinoma of the gastrointestinal tract there was usually a characteristic curve of sugar tolerance, not approximating the normal, and differing from that associated with carcinoma of other regions of the body. 2. The sugar tolerance was sufficiently distinctive to render valuable assistance in the diagnosis between carcinoma and other diseases of the gastrointestinal tract. 3. A sufficient number of early cases of cancer of the stomach and intestines had not as yet been tested according to this method, so that its value, as a means of early diagnosis, was not established. The positive curves occurred whether the involvement was slight or great, giving the impression that results might be definite even in early cases. Further study is required. 4. The test could not be absolutely relied upon without taking into consideration clinical evidences of the disease; still, when properly performed, this blood sugar tolerance test should be of considerable diagnostic help in obscure cases of carcinoma of the gastrointestinal tract.

Cultures of Diphtheria Bacilli in Whole Coagulable Blood.—Dr. S. Solis-Cohen and Dr. George Heist, of Philadelphia, said that in previous papers they had treated of the bactericidal or inhibiting power of whole blood for pneumococci and other bacteria. In the present study the diphtheria bacilli were examined by the same methods. Diphtheria bacilli were cultivated in capillary tubes of defibrinated blood. They grew rapidly and vigorously. The rather scanty air supply did not hinder their growth. The guineapig was found to be very susceptible to infection by the diphtheria bacillus, while the rat was almost immune. The bacilli were cultured in the whole blood of these two species. In guineapig blood the bacilli grew almost, but not quite, as well as in defibrinated blood. The blood evidently possessed a slight resistance to the diphtheria bacilli. On the contrary, in the rat blood diphtheria bacilli grew very poorly. Thus in the case of these two species there existed a correlation between resistance of the blood to the bacilli *in vitro* and the actual resistance of the animal to infection. Diphtheria bacilli were grown in the whole blood of children, and, at the same time, a Schick test was done on the child. The whole blood of children was highly bactericidal for bacilli which had been artificially cultivated for twenty years. The Park and Williams strain No. 8 was used. A strain fresh from a case of diphtheria was found to grow much better in whole blood, but still there was a marked bactericidal action; 160 children were tested in this manner. There seemed to be little or no relation between the resistance of the blood to diphtheria bacilli, and the resistance of the child to diphtheria, as shown by the Schick test. The conclusion was that the susceptibility of the guineapig and that of the child was of a different character. Prolonged cultivation of diphtheria bacilli was found to lower their ability to grow in whole human blood, but not to appreciably lower their toxin producing power.

Acute Infectious Myoclonus Multiplex.—Dr. J. Ramsay Hunt, of New York, said that various types of this infection had been recognized—cerebral, cerebellar, or meningeal. Cases of herpes zoster were limited to the spinal ganglia. Neurologists had been interested for forty years in cases of acute infectious paramyoclonus multiplex of the lower motor neuron type, spinal, not cerebral. The etiology seemed to be varied, lead, alcohol, diabetes, exposure to cold, exhaustion, poliomyelitis, being causes; but the disease had not been asociated with infections. This condition seemed to represent a definite clinical type of reaction to infection, but whether the sporadic cases had the same etiological factor as the epidemic cases one could not say, but probably they had.

Hepatic Margin of Safety in Bile Elimination.—Dr. Peyton Rous and Dr. Philip D. McMaster, of New York, asked how much obstruction of the biliary system was required for the production of a clinical jaundice. No studies had been recorded on this point. The authors found that the bile ducts from more than eighty per cent. of the dog's liver could be obstructed without the appearance of bile constituents in blood or urine, and from more than ninety-five per cent. without the appearance of tissue icterus such as regularly ensued when obstruction was total. In monkeys the margin of safety was approximately as great. There was an additional element of safety in the hypertrophy of the liver portion with duct left free, which occurred rapidly under the conditions of local obstruction. It followed from these observations that clinical jaundice could scarcely be the result of local obstruction. When it occurred in connection with a circumscribed liver lesion one must suppose that the liver as a whole had been influenced by this latter.

Epinephrine Hypersensitiveness and Its Relation to Hyperthyroidism.—Dr. F. W. Peabody, Dr. C. C. Sturgis, Dr. E. H. Tompkins and Dr. J. T. Wearn presented a paper on this subject. They believed that epinephrine hypersensitiveness, as indicated by the positive reaction after injections of epinephrine according to the method of Goetsch, had become so generally regarded as of specific diagnostic significance in hyperthyroidism that it had seemed to be of importance to study in more detail the conditions under which it might occur. A study of the reaction in normal individuals showed that it was not present in a group of twenty-six seasoned soldiers; it was present in fourteen per cent. of twenty-eight medical students, and in forty-eight per cent. of 103 soldiers without evidence of organic disease, but with the symptom complex of effort syndrome. Seven psychoneurotics all gave positive reactions. Among hospital patients it was found that seventeen per cent. of seventeen patients with organic heart disease, and fifty-seven per cent. of twenty-one patients convalescent from acute infection, gave positive reactions. Positive reactions to epinephrine were found in fifteen out of thirty-one cases of hyperthyroidism. Six unquestionable cases with metabolism within twenty-one and thirty-five per cent. above normal gave negative reactions. On account of the wide distribution of the reaction among persons in whom there was no evidence of hyperthyroidism, it should certainly not be regarded as having any specific significance in the diagnosis of this condition.

Dr. M. H. Fussell, of Philadelphia, said that he was greatly pleased to hear these observations on the soldier with effort syndrome. The socalled Goetsch test had been widely accepted as a positive indication of hyperthyroidism. The unreliability of such a conclusion was now shown.

Intrathoracic Teratomata.—Dr. Samuel W. Lambert, of New York, included dermoids under teratomata. These growths ran a characteristic course. They were congenital, grew until puberty, and then became quiescent. They occasioned slight pressure symptoms. The shape was a characteristic spherical one, and they were usually located on the anterior mediastinum. It was possible that malignancy might be the end of such cases. Dr. Wood made the autopsy in one case and found a large adherent tumor with irregular tissue sections characteristic of teratomata. There was a great variety of tissue cartilage, bone, solid epithelium, squamous celled epithelium, and possibly beginning nasopharyngeal structures.

Dr. J. B. Herrick, of Chicago, said that his autopsy studies were made on a patient who was followed for over a year. Fluoroscopic examination indicated there was no aneurysm. It was thought there was a dilated right auricle. The tumor was more attached to the pericardium than to the auricle. It was semisolid, filled with cholesterin crystals. Such tumors within the pericardium were very rare.

Dr. Hobart A. Hare, of Philadelphia, asked if Dr. Lambert excluded gonococcus infection by the complement fixation test. The spherical cysts were usually quiescent.

Dr. Cauly Robinson, of St. Louis, said he noted there were eight ounces of pus. Was there anything to confirm the diagnoses of teratoma? The fluoroscopic irregularity of aneurysms differentiated them from tumors. He had collected statistics as to mediastinal growths and had been surprised to find how many cases came to the dissecting room. Most extraordinary changes could be found with reference to the peribronchial lymph nodes. Many fevers might be due to secondary suppurative changes in tumor formation.

Dr. Samuel Lambert, in closing the diagnosis, said that the tests were not made by the complement fixation test for gonococcus. He did not believe these cases were quiescent, as Dr. Hart said. In the case illustrated, no hair was discovered. The pus was examined very carefully, fluoroscopic tests did not show any evidence of aneurysm. All the cases showed a negative Wassermann. Some had been given provocative treatment with salvarsan, in the endeavor to bring out this point.

Experiments on the Therapeutic Action of Röntgen Rays.—Dr. Francis Carter Wood, of New York, reported experiments made to determine the value of radium and the x ray as adjuncts to surgical treatment. Hardly two men were agreed as to dose and method, thickness of screening, etc. Thus it was hard to determine how much was necessary to produce a cure. Scar tissue rendered the tumor quiescent, but recurrence might take place in the lymph nodes after as long a period as ten or fifteen years. The scar tissue prevented the tumor cells from gaining nourishment. It was necessary to ascertain the amount necessary to kill the cancer cell. In the transplantable tumors of animals experiments had been made to determine the lethal dose of radium under filtration, and also the lethal dose of the x ray. It was attempted also to discover the biological difference between soft and hard rays in the x ray. The value of continuous and of intermittent doses was tested, to determine whether the cell was killed by intermittent as well as by single doses. Also tests were made to see if there was anything in the quantity, whether a large quantity for a short time was as effective as a small quantity for a long time. Experiments were also made as to the effect of heat on the tissues, and it was found that heat could be used as effectively to kill the tumor cells, and at a point at which it would be impossible to carry the x ray or radium, and at a point at which x ray mortality would be higher than surgical mortality. If the action of heat to the tissues could be used to supplement x ray and radium therapy one could see the possibility of the cure of cancer within reach.

Paroxysmal Tachycardia of Ventricular Origin and Its Association with Coronary Thrombosis.—Dr. G. Canby Robinson, of St. Louis, and Dr. George R. Herrmann dealt with rapid heart rate associated with an abnormal point of origin of the cardiac impulse. The ectopic origin of the impulse might be in one of the auricles or ventricles, and the ventricular cases were rare and of more serious prognosis. The nutrition of the ventricular wall became impaired as a result of interference with the coronary circulation. Electrocardiographic records were necessary for diagnosis. A ventricular rate of 150 or more was noted. In all undoubted cases in the literature the patients were middleaged men.

The Heart in Influenza, with Electrocardiographic Studies.—Dr. Walter W. Hamburger, of St. Louis, asserted that the question as to whether influenza affected the heart was unsettled. Among the English reports, Conklin showed that influenza picked out the conduction system and affected the auriculoventricular nodes. There were three types: 1. Fatal cases in which the myocardium was affected. 2. Acute but not fatal cases, in which the heart muscle findings cleared up after several weeks. 3. The subacute or chronic cases which did not clear up. There was no question but that influenza infection did affect the heart muscle and that it had a definite effect on the auriculoventricular system.

Nodal Rhythm with Reverse Block and Paroxysmal Tachycardia.—Dr. M. H. Fussell, of Philadelphia, and Dr. C. C. Wolferth reported that auriculoventricular rhythm had been noted by many workers, and it could be experimentally produced by interference with the impulse of the auriculoventricular node. The majority of cases were due to depressive influences. In a case of junctional paroxysmal tachycardia in a woman of sixty-two, the attacks had persisted since childhood, becoming more frequent as she grew older. For two years she had been invalided. She was able to control the attacks sometimes, but not always, by taking a deep breath and holding it.

Causal Factors of Emphysema Attending Bronchiolar Hypertonus.—Dr. C. F. Hoover, of Cleveland, Ohio, believed the statement that emphysema was due to expiratory dyspnea had little support. Another theory was that the thorax first became enlarged and then the lung became deformed. The diaphragm was the most mobile boundary of the thoracic cavity. In bronchiolar spasm there was increase of the three dimensions of the lung. There was a difference between obstruction of the bronchus and of the bronchiole. If there was obstruction of the bronchus there was diminution in the lung. The lower right costal margin tended toward the median line in inspiration. Adrenalin would cause it to move out again. Obstruction of the trachea was very rare without secondary bronchitis. In emphysema there must be collapse of the lung without expansion. With any expansion or increase in the size of the lung there was no emphysema.

Prognosis in Cardiovascular Disease with Special Reference to the Application of Graphic Methods.—Dr. James D. Heard and Dr. George E. Hein presented the results of the studies of the electrocardiograms of 780 patients in a general hospital. The limitations of the study were great, on account of the impossibility of following up patients and because of the faulty histories. The source of the material was interesting: sixty-one per cent. came from the medical department; sixty per cent. of the patients were males, with an average age of sixty-seven years. There was rarely definite evidence of syphilis. Fourteen per cent. of the patients died. Most of the patients were of the type described as cardiosclerotic cases. Possibly some were of the functional type, but not many, and low amplitude was evidenced as the patients grew worse. This showed a parallel with the clinical gravity of the cases.

The Hereditary Factors in the Resistance of Tuberculosis.—Dr. Paul A. Lewis, of Philadelphia, and Dr. Sewell Wright, said that in the Bureau of Animal Industry careful experiments had been made with the breeding of guineapigs, in regard to resistance and other characteristics. Sewell Wright started a stock in 1906, which since then had been carefully studied as to the effects of inbreeding in twenty-three pairs of guineapigs, which had reached the fifteenth generation of inbreeding. There was a decline of vigor in all respects. Crossing the inbred animals increased the vigor. There were differences in the kinds of vigor. As regards resistance to tuberculosis, the characters were the same. Sex, it was found, made no difference. Age and weight at weaning made very slight difference in favor of the older and heavier animals. Inbreeding was found to make much more difference than weight and sex. In regard to susceptibility in families, seven per cent. was found due to age and weight; thirty per cent. due to heredity; sixty per cent. due to unknown causes. Animals injected intreperitoneally died much more rapidly than those injected subcutaneously. The size and frequency of litter, and the percentage of young born alive, was taken into consideration in computing vigor of stock.

Dr. George Kober, of Boston, said that Dr. Lewis's study recalled to his mind the remarkably large percentage of cases of tuberculosis during the war, in the Southwestern states, which was three times that of the average for the Eastern states. There could scarcely be any other interpretation than that of heredity. The families of these young men or their parents had gone out West for tuberculosis, and one was now dealing with the factor of hereditary predisposition to the disease in the offspring of persons who had migrated to those states in search of health.

Dr. Augustus Wadsworth, of Albany, N. Y., said that there was likely to be a confusion of the terms immunity and resistance in expressing susceptibility to infection. His ideas had been considerably cleared by differentiating resistance due to the strength of the person in recovering from infection to the resistance which prevented cases of the infection.

Dr. Solomon Solis-Cohen, of Philadelphia, said that his own observations had led him to believe that lessened susceptibility and greater capacity for recovery were both connected with increased activity of the endocrine system, especially that of the thyroid gland, and he asked whether such studies could not be undertaken in these inbreeding experiments on animals.

Dr. Paul Lewis, in answer to Dr. Wadsworth, said that he saw no need to complicate the terminology. He did not know whether there was a difference between resistance to toxicity and resistance to bacterial growth. They felt that for the first time there had been a measurable element worked out; that is, that there were families in which a difference could be calculated and expressed in definite terms. Thus it might be possible to express the size of dose in terms of resistance, according to a mathematical scale. From the point of view of tuberculosis experimentation, this represented an advance. In regard to the application to human pathology, one would have to go very slowly in carrying over results into the field of human pathology, but it was hoped that these experiments would lead in that direction some day.

Dr. Sewell Wright said that in some similar experiments in removing part of the thyroid and adrenal gland there was no difference in infection to tuberculosis in the experimental animals. There was hyperplasia in the parts of the organs left, but that was the only result observed.

A Study of the Preparation of Antigens from Cultures of the Tubercle Bacillus for the Complement Fixation Test.—Dr. Augustus Wadsworth, of Albany, N. Y., said that the complement fixation test needed satisfactory methods of preparing and standardizing the antigens so that the infection at different stages could be determined. It was not of much use at the bedside clinically, being difficult in respect to diagnosis and interpretation. In regard to tubercle bacillus antigens, three strains were used: 1, bovine; 2, virulent human; 3, nonvirulent human, incubated at 35.5° C. The results did not differ from those of other investigators. Studies were made on experimental infections and carried out with hemolytic organisms. It was found that aqueous extracts gave satisfactory antigens. Next it was necessary to get immune sera to those strains which could be measured against the antigens. Cows and guineapigs were found of no use, but an immune serum was obtained from the horse. Filtrates were found to be unsatisfactory for antigens; if dialyzed they lost their anticomplementary characteristics. The broth filtrate was tested to see what the injected substance was; it was all removed by animal charcoal, but could not be recovered from the charcoal. Three ten thousandths of a c. c. fixed two units of immune serum.

Dr. Paul Lewis, of Philadelphia, in discussing Dr. Wadsworth's paper, asked whether he had found any indication that alcoholic extract comprised the whole of the antigenic character of the tubercle bacillus, or if there was anything in the residue which was injected.

Dr. Wadsworth, in closing, said that they were just at the beginning of the investigation as regards physical conditions, and further facts might clear up several questions. The filtrate after dialyzing became active without any extraction. Simple removal of the dialyzable factor removed that anticomplementary power.

Irritability and Stimulation.—Dr. S. J. Meltzer, of New York, said that irritability was the characteristic element of life. Life had been conceived as comprising three phenomena: motion, secretion, and sensation. No life could exist without some living tissue being in action, and any living function must be continually in action. The physiologist must consider why the organism was in action, and it was also necessary to remember that there were some forms of life which appeared to have no action at all. The arrest of conditions did not always mean that tissue was not animate, but that it was under the condition of inhibition. This explained the dualistic theory, which was not dogmatic. Anything which was acting under a certain state of life might be called a stimulus, but a stimulus might not be increase of activity; it might be a decrease. Either stimulation or inhibition might be produced. The latter meant life, just as much as the former. In contraction living substances were used up, and the body would go to pieces if it were not for the fact that during inhibition living substances were again accumulated. Inhibition was the condition which made activity successful.

Further Studies on Influenza.—Dr. E. C. Rosenow, of Rochester, Minn., said that the importance of the streptococci, including the pneumococci, during the epidemic of 1918, had been emphasized. Injections of streptococci were followed by a leucopenia corresponding to the leucopenia in the patient from which the strain came. In the epidemic of 1918 there was a high mortality rate early in the epidemic waves. Later the character of the disease changed markedly. In experimental work the organism was found to change with animal passage. The pathologists also noted a change in the character of the lung lesions which occurred early and late in the epidemic. The strains tended to lose in virulence. The second animal passage was most virulent on the trachea; in the peritoneum virulence was high and stayed high. In the statistical study of the epidemic it was evident that the changes in mortality were due to changes in the virulence of the microorganism.

Dr. BUNTING, of Madison, Wis., said that in the 1920 epidemic in Madison daily blood counts were made to throw light on the leucocytic findings. There was an almost immediate leucopenia and inhibition of the marrow cells. In the lung cases there was immediate leucocytosis which occurred before the clinician could tell what had happened. This coincided with the first clouding of the lung in the x ray picture.

Dr. JOSEPH L. MILLER, of Chicago, said that a leucopenia was noted in a streptococcus epidemic associated with measles. There was frequently leucopenia in streptococcus pneumonia.

Dr. E. C. Rosenow, in closing the discussion, said that contact played an important part in the epidemics, though the reason was not known. There was increase and decrease in the virulence of organisms. The type of reaction in the animal might change completely, although the organism was the same throughout. To draw the conclusion that the oncoming leucocytosis with the occurrence of pneumonia was due to a secondary invader, might not be true. Prolongation of resistance might change the organism so that there was no leucopenia, but a leucocytosis instead.

Eventration of the Diaphragm.—Dr. ELMER H. FUNK, of Philadelphia, and (by invitation) Dr. WILLIS F. MANGES, said that the diagnosis in this condition could now be made by the x ray. There was a typical elevation of the diaphragm. It was often associated with other anomalies and was probably congenital. In one case seen, in a white female, aged thirty-nine, there was pain in the upper abdomen and back, and shortness of breath. It was thought that there was a hydropneumothorax, but a needle inserted in the chest found nothing. The x ray showed a high position of the diaphragm; the heart was displaced; the lungs were free from disease; there was widening of the subcostal angle on inspiration. The abnormality was not reflected in the external symmetry of the chest.

The Production of Generalized Syphilis in the Rabbit by Local Inoculation.—Dr. WADE H. BROWN, of New York, and Dr. LOUISE PEARCE, of New York, (by invitation) presented a paper on this subject, in which they stated that lesions upon the skin in the experimental rabbits were quite rare. In 126 cases the animals showed lesions at the site of inoculation. There was a very marked reaction in the testicles and scrotum, which it was thought might inhibit the production of lesions elsewhere. Tests were made to determine whether all the animals had a generalized reaction following local inoculation. Lymph nodes from infected rabbits were implanted into the testicles of normal animals, and infection was produced with these excised lymph nodes. The organism was recovered from the heart's blood in from seven to one hundred days after implantation. This proved that dissemination of the organism occurred. An attempt was made to determine the protective effect of local lesions against generalized lesions. An amputation of the testicle was made after forty-eight hours, but general infection supervened.

Dr. HOMER F. SWIFT, of New York, said that this experimental work had a bearing on the treatment of human syphilis. In the army it had been noted that when the drug was used to cure the lesion, but not to kill the spirochetes, the reactions were more severe than if the syphilis had been allowed to run its course. This was the first time such a conclusion had been demonstrated in a convincing manner. A note of warning should be sounded: this demonstration of the generalization of the spirochete so early might have something to do with letting down the use of prophylactic measures after exposure. Local prophylaxis was effective for a certain number of hours.

Dr. GEORGE BLUMER, of New Haven, said that there had been periods when attempts had been made to prevent syphilis by excision of the primary sore. In Dr. Brown's work the excision of the chancre led to unusually rapid dissemination of the disease.

Dr. Wade H. Brown, in closing the discussion, said that the status of the disease in the human being, as regards magnitude of the primary lesion and the generalized reaction, was different, but generalization could occur in the human being as early as in the rabbit. If the cases were not treated following excision the reaction was more pronounced. That, however, did not contraindicate excision of the chancre. In human cases he did not think that excision of the chancre would prevent generalization.

The Dietetic Treatment of Gastric Ulcer.—Dr. MARTIN E. REHFUSS, of Philadelphia, reported the work on the gastric digestion done at the Jefferson Medical College. He could not say what was the etiology of the ulcer, but acidity of the gastric contents had something to do with the chronicity of the ulcer. It might not cause it, but it would prolong it. These studies were undertaken over a long period of time and with different foodstuffs. The results seriously undermined the modern conception of the treatment of ulcer. Three types of normal stomach were observed in the hundred students examined: 1, hypersecretive, high acid, one hundred per cent. or over; 2, esosecretive type; 3, a slow secretive type. Chemical secretion was found to continue all the time, and psychic secretion at varying times. There was an interdigestive phase in the fasting stomach with an average total acid of thirty and free acid of eighteen to twenty. This was between digestive phases and showed increase of trypsin. His studies had led Dr. Rehfuss to incline to the bacterial causation of gastric ulcer. He found very little difference between the unobstructed stomach and the normal stomach. Some cases showed reduction in acid. In ulcer cases there was disturbance of the interdigestive phase.

Dr. G. H. WHIPPLE, of San Francisco, said that by concentrating the x ray over the abdomen of the dog, one could produce ulcers that would not heal and would perforate. This could not be a question of acid, but a question of the type of injury to the mucous membrane. Whether that was a factor in human ulcers he did not know.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and the Medical News

A Semimonthly Review of Medicine and Surgery.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, APRIL 6, 1921.

Dr. SIPPEY, of Chicago, said that he was interested in Dr. Rehfuss's report. He had had considerable experience in controlling acid. Bismuth was formerly used, but now he found that calcium carbonate acted to prolong the control of free acid. Some of the factors in the causation of ulcers were unknown. Hydrochloric acid seemed to have a devitalizing action of the protoplasm and did damage to the cells. To control peptic activity, one must control free acid.

Dr. M. E. Rehfuss, in closing the discussion, said that in experimental animals work had been done by producing ulceration with various forms of toxins, but if one constantly neutralized the stomach of the animal during injection of the toxin, one could inhibit the formation of ulcer. The acid had a secondary character, but the toxin the primary rôle.

Blood Regeneration After Simple Anemia as Influenced by Various Dietary Factors.—Dr. G. H. WHIPPLE, of San Francisco, said he had found that the pigment volume was blood volume, times the percentage of hemoglobin. In an animal bled till the pigment was reduced to a level of forty per cent. below normal, followed by the institution of a meat diet, the pigment level normalized within four weeks. With milk diet the forty per cent. level persisted. A fasting animal with access to water could reproduce the hemoglobin, showing that the body could reorganize its elements into hemoglobin. Spinach was found to return the level of hemoglobin to normal and keep it there. Milk gave the minimum regeneration. Cooked liver and cooked beef heart produced the best regeneration. Blaud's pills had no effect.

Dr. HARLOW BROOKS, of New York, said that meat, being a natural diet for a dog, might be supposed to have more influence in improving the hemoglobin.

Dr. S. J. MELTZER, of New York, said that when he entered into experimentation he did so from the human side. He did not know any drug that acted so well in human chlorosis as Blaud's pills, nor one that had more specific action, unless it was salvarsan.

Dr. Whipple said that the experiments were done upon dogs, and he left the interpretation of results to the internists.

On Retrograde Stretching in the Treatment of Impermeable Cardiospasm.—Dr. MAX EINHORN, of New York, said that these cases of benign impermeable cardiospasm were divided into two groups: in one the bougie engaged in the sacculated wall of the esophagus and failed to reach the cardia; in the second group the bougie struck the cardia and failed to pass it. In the second group there were two subdivisions: 1, the bougie met with a resistance which could not be pushed farther (fixed cardia); 2, the bougie met with a resistance which could be pushed down for about half an inch (movable cardia). With regard to treatment, retrograde stretching by means of the pyloric dilator accomplished the best therapeutic results.

Radium and the Normal Brain Tissue.—Williamson and Brown (*Surgery, Gyneeology and Obstetries,* September, 1920) give the following findings i ntheir experiments concerning the effect of radium on normal brain tissue: 1. The X-rays after passing through 0.4 millimetre of platinum penetrate brain tissue and have a destructive action within a radius of five millimetres, with a doses of 900 milligram hours. 2. The effect upon the bloobessels varies according to the distance from the radium andth e number of hours applied. 3. The experiments give assurance that, in the case of those brain tumors which respond readily to radium, little or no damage will be inflicted upon the brain tissue surrounding the tumor, if the radium is implanted in the growth. The dose employed on the growth can be regulated so as to be destructive only to the peripheri. The authors state that it is their purpose to examine the brain of a dog after a period of four months in order to determine what reparative processes will take place in that time. It seems advisable also to study the effect of greater milligram hour dose upon the brain tissue. They have begun along similar lines a series of experiments to determine the effect of varying doses of radium upon the spinal cord.

Prognosis in General Paralysis of the Insane.—Egbert W. Fell (*Southern Medical Journal,* May, 1920) says that unless death results from some intercurrent disease, the patient becomes progressively more demented and weaker until he is bedridden. He is very untidy and quite helpless. He is so nearly mindless that he is unaffected by his surroundings, but he may until the last retain residuals of his elated or depressive ideas. Death as a result of this gradual failure is the natural termination of the disease, but it may be caused by an epileptiform or apoplectiform attack, or it may be due to an infection. Pneumonia is the most frequent form of terminal infection, but pus infections in the form of large abscesses, septicemia, erysipelas, bed sores, or cystitis, often hasten the final result.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Semimonthly Review of Medicine and Surgery, Established 1843.

Vol. CXIII, No. 12. NEW YORK, WEDNESDAY, APRIL 20, 1921. Whole No. 2207.

Modern Commentaries on Hippocrates*

The Humoral Theory and Its Origin

By JONATHAN WRIGHT, M. D.,
Pleasantville, N. Y.

While it is scarcely to be doubted that we must seek in the ideas of the blood, held by primitive man, the origin of the development of the humoral theory, which ruled in medicine for the first two thousand years of its written records, it is not easy to lay bare in that development the continuity of thought which is exhibited by the rise of the doctrine of the pneuma (1). The history of that we have found not only continuous but coherent and comprehensible by modern thought as originating in primitive ideas as to the soul, ideas existent almost as far back in the depths of time as evidences of the existence of man himself. From the start it was a theory, an indirect deduction from dynamic phenomena, starting from no observable perception of sense, from no concrete materialistic fact. Such a fact, visible to all observers everywhere and always, was the blood. To this sharp dialectic differentiation we must ascribe most of our difficulties in making the history of the thought in regard to the humors in the earliest medical records exhibit the legitimate inheritance they have from primitive ideas in regard to the blood. These ideas were so multiform and the practices based on them in primitive magic were so diverse, so widespread, including not medicine alone, but social organization, politics, religion, law, that we can find little clue to the guiding thread out of the primitive chaos.

In medicine we are at a loss to know why blood is grouped with phlegm and bile. Galen protests that Plato was wrong to place blood among the secondary tissues, not alone because Galen's obsession was that all disease is primarily in the blood, but because all flesh, we infer, and the other humors, are derived from it; yet this is not clear in the thought of Galen, or at least not consistently worked out in his interminable discourse. We can only conjecture that the humors of the body became grouped in thought primarily because they are the body fluids. Indeed, since we have dropped the humoral theory we have largely dropped the nomenclature and speak of them now as the fluids, but originally something of the pathogenic and physiological importance, so early associated with the blood, not unreasonably attached itself to the other humors. The bile, indeed, from a physiological standpoint, was in line with these important connotations, but what shall we say of the phlegm? The Chinese and, in fact, some of the Greeks, added urine to the number. That number was with the orthodox four—blood, phlegm, bile, yellow and black. Why there should have been four precisely, and not more or less in the nascent Greek civilization, of the body fluids which were humors, I shall attempt to show elsewhere was due to Egyptian influence (2). We know the lymph and the serum and the various fluids of the body, of which water is the principal constituent, but much of this was hidden at the beginnings of physiology. Still it is not an adequate explanation of the grouping of the blood, the bile, yellow and black, and the phlegm, so exclusively together. This curious obsession with the number four, so foreign to the thought of Hippocrates himself, is seen strikingly illustrated in one of the best of the spurious books. In IV Maladies (32), in discussing the spermatic fluid and the part it takes in generation, the author says: "The woman and the man have in them four kinds of fluid which engender the diseases, which do not come from violence. They are the phlegm, blood, the bile, and the water." Black and yellow bile, differentiated, did not for some reason seem to enter properly into the composition of the tetrad, so water must take the vacant place. Apparently there could not be a trinity in the twist given to the author's mind by the prevailing theory. We recognize the almost infinite possibilities in the blood, but why of the others some are included and the rest usually passed over in the special pathology is not clear nor was it entirely satisfactory to all the ancients.

However, we must recognize that until the rise of modern medicine, almost until the rise of serotherapy and the chemistry of the blood, we were in therapy as earnestly engaged in correcting or removing the bile and suppressing the phlegm as in correcting or utilizing the blood. Blood therapy has in fact been born again, after an almost con-

---

*I have made use of the Littré edition of Hippocrates and the English translation of the genuine works by Adams. For Galen I have used the Kühn edition only.

Copyright, 1921, by A. R. Elliott Publishing Company.

tinuous sleep since the days of the cave. We find, however, that the bile and the phlegm have little recognition in any respect from primitive man, while the blood looms as large in his magical therapy as in his other superstitions. We take note of the same observation in such record as we possess of the Babylonian and Egyptian civilizations. In the former we find the liver looked on as the origin of the blood, and for that reason the liver takes on what appears to us an excessive importance. The bile seems to have been a bitter excrement of the blood, and in Babylon by virtue of its bitterness we get it associated, if we are to judge from a common nomenclature, with the vegetable poisons. In the Egyptian records, in the Papyrus Ebers, there is some mention of the liver and the bile, which at least, it would seem, would have assumed more prominence if the humoral theory had already begun to bloom and expand there before it was transferred to Greece. In the Egyptian therapy the blood of animals, if not of man, plays a large rôle, and so does their flesh, a regular organotherapy, and a fullfledged stercotherapy, but we get very moderate hints of the bile in therapy or pathology, or etiology, fifteen hundred years before Christ in the basin of the Mediterranean.

In the Zend Avesta we get a clear intimation of the division of the Cosmos into elementary constituents, plainly antedating and doubtless antecedent to that of the Greek philosophers, who drew it from the oriental philosophy with which they were in contact we can scarcely fail to believe, but we do not readily find a corresponding tetrad for the humors. The waters are balm for disease both in Hindu and Babylonian hymns, but if, as Von Oefele supposes, we are to trace the tetrad of the body fluids to Egypt or to any oriental locality, we have only the argument of its tetralogy (so familiar a term in the Greek drama) to lean upon. I can easily believe that the impulse to pitch upon four for the number of elements as for the number of humors may have originated in the superstitions of nascent Egyptian mathematics, so also for the four qualities, but I can find no other reason for attributing either to Asia or to Africa the birthplace of the humoral theory. The indications, if of any value, point to Sicily. In the Egyptian manuscripts, and likewise in Homer, we get more than traces of the pneuma, but not a trace of the humors. The ichor of the gods differs from the blood of man, but we get no hint of the "humors" of either.

So connected with the philosophy of the Sicilian Empedocles are the traditions of a tetrad of the elements and a tetrad of the qualities, even a tetrad of the colors, that we are constrained to make a note significant of this origin of a fully developed humoral theory existing in the Sicilian school, perhaps as early as the date of the birth of Hippocrates (460 B. C.). This, however, is but a conjecture. The qualities are ascribed to Zeno, the Eleatic, but as he commented on the poems of Empedocles we may further conjecture that Empedocles, who is said to have also been with Parmenides at Elea, first made them public in his poems, but that they were derived from Egypt through the Pythagoreans. I have drawn attention (6) to the criticism of Aristotle to the effect that Empedocles seemed at times to look upon the number of elements as two; that is, he grouped air, earth, fire and water as one element and his energies, Love and Hate, as the other—a remarkable approach to some modern conceptions. In another way of putting it, he reduced the six cosmic elements to two. Melissus, said to have been a follower of Parmenides, was a pure monist. The qualities do the differentiating apparently. In "The Affections I," which Littré supposed to be a *vade mecum* and not a book of Hippocrates, but belonging to the school of Cos, we have the statement, "All diseases among men come from the bile and the phlegm." We thus get much vacillation in the beginnings of humoral doctrine as to the numbers of elements, qualities and humors. Galen quotes Plato in justification of his own excesses of partisanship in the cause of the humoral theory. He says Plato attributes the excellence and the vigor of the soul to its greater or less degree of dryness, and traces this idea back to Heraclitus. Humidity is harmful to it. Not only Plato, but even Aristotle and Theophrastus and other disciples of Plato, and the older physicians, Diocles, Plistonicus, Mnesitheus, Praxagoras, Philotimus, Herophilus imitated the discourse on the humors which he attributes to Hippocrates. "Erasistratus, however, is known to have disputed with the Coans, not mindful of the truth and hesitating to say a humor was warm or cold or dry."

Galen is certainly wrong in ascribing to Hippocrates the tetralogy of the elements and their qualities, but it is possible he may be right in ascribing at least to an author of some of the books of the Hippocràtic Corpus, whoever he may have been, the first enunciation of the fullfledged humoral doctrines in medicine. Certainly there we find them first fully developed in the matter which has come down to us direct, but that is absolutely of no value in the argument of its origin, for practically the Hippocratic Corpus is recognized as the sum total of all Greek medicine before Aristotle. The formulation of the qualities applicable to the elements of the body is attributed to Alcmaeon. "The preservation of health is the proper equilibrium of the forces, of the moist, dry, cold, warm, bitter, sweet, etc.; the preponderance of one alone, on the other hand, is the exciting cause of disease" (3), but there is no reference that I am aware of which indicates that the qualities, in the thought of Alcmaeon, were largely dependent for their manifestations in the animal body on the humors, and that these are the active agents of health and disease. Since there is only a fragment or two of his opinions preserved to us, this is not of significance, but we find no specific reference to the humors as such in the much more abundant fragments of Empedocles, whose lines plainly demonstrate his formulation, not alone of a tetrad of the qualities and of the elements, but of the colors. While Alcmaeon includes in the qualities, as does the author of *Ancient Medicine*, other attributes, bitter, sweet, etc., this recognition of the humors is not evident so far as my reading of the translations permits me to judge. Yet it is possible, even probable, that Empedocles accepted the four humors as a part of his scheme. Windelband (4) incidentally attributes this even to Alcmaeon, who is supposed to have been the preceptor of Empedocles, but, if this is so, I have failed to find it. Both refer to qualities, but so far as I have observed there is no specific reference to the humors.

Burnet (5) and others, Wellmann, I think, attribute this to Philalaos. Diogenes Laertius quotes Apollodorus to the effect that Philalaos was a contemporary of Democritus (b. 460); if so, of Hippocrates also. If neither Empedocles, one date of whose birth is given as 490, nor Alcmaeon, whose date is uncertain but certainly earlier, really did not know of the humors in their theory, the birth of the essential—the absurd, I am tempted to say—humoral doctrine took place in the generation of Hippocrates II or in the one following that. So long as we are asked to consider the elementary division of matter and that each element had its qualities which revealed it to the senses, we are on the hard and fast basis of modern physics, even in the time of Alcmaeon, but when Empedocles introduced the rigidity of numbers into it, his tetralogy, it became not a prop, but a clog, and the disaster for the human intellect was accentuated in medicine by the further rigidity injected into it of the supra-importance of four particular body fluids. No wonder sects arose, especially the empirics who doubly damned all theory. Our sympathy should go out to them. If we must seek an earlier origin than that of the Sicilian school, we do not know where to turn except to Egypt; that was the home of rigidity, where it was a virtue, seemingly admired by Plato, to chant the same hymns for ten thousand years. If anything was wrong with the hymn, the disaster we see was incalculable. I do not wish to overload the discussion with what at best is but inference, yet it is perhaps well to remember how much Plato owed to the Sicilian philosophers. Philalaos was one and Philistion, especially, was another. It is a matter of record that the latter was a friend of Plato, perhaps his guest in Athens as well as his host when Plato was in Sicily. Philalaos differed in details as to the elements, making a distinction as to the air and the wind, and there is considerable conjecture as to whether the Pythagoreans did not add a fifth element, which was the void. We see at this early time considerable healthy shifting of the argument, but in medicine, at least, after Hippocrates it hardened into the conventional lines for two millennia, like the Egyptian hymns.

Whether it was Hippocrates or an older writer, Alcmaeon or even Xenophanes, who was the author of *Ancient Medicine,* he is impatient at the fettering, stifling bonds of theory. He opens up with the protest: "Whoever, having undertaken to speak or write on medicine, have first laid down for themselves some hypothesis to their argument, such as the hot or cold or moist or dry or whatever else they choose (thus reducing their subject within a narrow compass and supposing only one or two original causes of disease or of death among mankind), are all clearly mistaken in much they say." The man who wrote this never wrote *The Winds* or *The Humors.* We love to think it was the Father of Medicine, Hippocrates II. It is the keynote of all the Hippocratic books, which are commonly regarded as genuine, mindful of theory, not fettered by it.

After a thorough understanding of the comprehensiveness of the humoral theory, how it pervaded all medicine after Galen and dominated it, after patiently pursuing its track into all the crannies of ancient practice, after a saturation with it which arouses something of a feeling of physical nausea, the reader will turn with delight to this treatise. He will observe a master mind, whose orderly processes were outraged by its irrational intrusion into every field of observation and experience. The blows that the author of *Ancient Medicine* dealt it seem deadly. It lived, bloomed, thrived, endured, for two thousand years. The human mind may be God's greatest gift to man, but its puny absurdities, obstinacies, its blindness, often cause an auto-intoxication of disgust, when it reviews its past in a more sane state. Words of wisdom in the face of folly are as chaff before the wind. No fact, no protest of logic, suffices to turn aside the torrent when it once begins to run in certain channels. We have to wait until they silt up of their own inertia. Mere momentum is the only formula to apply to such a phenomenon, but an empty phrase cannot be found to explain the origin of such streams, when wisdom was at hand to guide them into better ways. The influence of *Ancient Medicine* was practically nil. Galen scarcely notices it. *The Humors* and *The Winds* and the *Nature of Man* were triumphant.

Galen, the devoted slave of the humoral theory, seems ever anxious to seek out those expressions, paragraphs, phrases and words of Hippocrates which support it. We suspect that out of his ardor for it partly arises the tendency to urge, further than the evidence warrants, that the authorship of those books or parts of them, which support the tenets of his faith, is to be attributed to Hippocrates —more especially as regards the *Nature of Man,* in part, and indirectly *The Humors,* which may have been transcribed by some disciple's hand. With some interpolation by Polybus of anatomical matter, and perhaps some even more inferior stuff by others, he thinks the part of the *Nature of Man* dealing with the humoral doctrine belongs to Hippocrates himself. The argument for this hinges on a passage in Plato's *Phaedrus* (270 B.): Hippocrates, the Asclepiad, says that this is the only method of procedure by which the nature even of the body can be understood"—that you can know the nature of the soul only by knowing the nature of the whole. Galen sees these sentiments only in the *Nature of Man.* Littré finds them also in the *Ancient Medicine,* and for him it is conclusive that that rather exceptional but most striking and philosophical book is Hippocrates's own. The argument for the *Nature of Man* being not by Hippocrates, but by Polybus, his son-in-law, is that Aristotle quotes the description of the veins therein contained verbatim, and says this was written by Polybus. Galen says there is an interpolation in the *Nature of Man* of this tractate of Polybus, as there is strong implication of the addition of other matter, probably several tractates sewed into one and sold to the librarian of the Ptolemies at Alexandria as all issuing from Hippocrates, when in reality it was only the first part, containing the humoral doctrine, which came from his hand. That such were the tricks and the ways of the old booksellers of those days seems very plausible, almost conclusive from internal evidence. It is especially appealing to us who know so many modern millionaires longing for a reputation that the outside of books give to their possessors.

That Ptolemy's librarian should have been thus hoaxed is an alluring view, difficult for a modern to give up; nor is it necessary on the supposition that all the trash was found together in a roll for none of which Hippocrates II is responsible. It is not for me to say whether we are to believe the recent Frenchman or the ancient Asiatic Greek, who is always protesting he is only a seeker—avoiding the modern phrase, humble seeker—after truth. Nor does it so much matter to our immediate interest to know whether Hippocrates himself or a weaker disciple wrote this book or that of *The Humors*. It suffices to know that the humoral theory was in full bloom during the time of Hippocrates, and this we have every reason to infer from the incidental testimony of other books, whose authorship is less hotly disputed by critics. Aristotle may have indeed quoted the anatomy from a separate tractate of Polybus rather than from the whole book, and this seems probable, to say the least; but it is to be remarked that in the opening phrases of the *Nature of Man* we have the same order of thought and almost the same order of its exposition, though in different words, as we find in the opening clause I have quoted from the *Ancient Medicine*. It is not necessary to consider this paraphrase as any evidence of the same authorship for the two books. The repetition of it, if the authorship was the same, shows that it was no chance remark, but a well pondered conviction. If, on the other hand, some disciple wrote the book on the *Nature of Man*, his transcription of the Master's thought leads us to the same conclusion. "In fact, I say man is neither altogether air nor fire nor water nor earth nor of any other substance, the existence of which in the body is not obvious. But whatever may be said as to this, at least those who profess such opinions do not seem to me to have very exact ideas."

Despite the striking similarity there is a shade of difference in the thought which leads to a suspicion that the latter is of different authorship from that of the *Ancient Medicine*, but one may with almost equal plausibility contend that such shades of difference may easily have been expressed at different times by the same writer. In the *Nature of Man*, however, there is a considerable expansion of the ideas, in the form rather of commentary than of repetition, in refutation of Melissus. In the course of it, too, we get a rigidity of constraint within the bounds of the theory of the four humors, which is not at all consonant with the impression made on the reader's mind, familiar with the opening paragraphs of *Ancient Medicine*. We get no excursion of thought; for instance, dwelling within the careless clause of the latter, "or whatever else they choose." That is a hostile note when struck in dialectics. In the *Ancient Medicine* the principle is combated of adhering to any one theory of the structure of man. In the *Nature of Man* the protest is against, not *any* theory, but against the theory that he is made of any one element alone. The assertion that he is made of four is absolute dogma. There is no divagation, as in *Ancient Medicine*, admitting there are other than the four qualities, dry, moist, hot, cold; no bitter, sweet or acid. There is a decided difference in mentality between the two books, a higher one if you please, in the latter.

The general terms of the theory, then, existed before Hippocrates in all probability. Though wary of entire assent, he makes incidental use of them, and it may well be doubted if the author of *Ancient Medicine* would have bound himself explicitly to there being just four humors any more than to there being just one, to the hot or the moist in exclusion of the bitter and sweet. If we exclude *Ancient Medicine* from the genuine books, as is sometimes done; if we also refuse *The Airs, Waters and Places* admission, which is rarely done, then indeed it is possible, though not likely, that the author of the other socalled genuine books may have viewed with approval the compilation of *The Humors* or himself have written the *Nature of Man*. Here we have the dogma of the humoralists baldly stated: "The body of man has in it blood, phlegm, bile, yellow and black. It is these which constitute its nature, these which create health and disease," by the just equilibrium of all or the dominance of one or the other. It is precisely the hot, the cold, and the moist and the dry, which modify them, with no mention of the bitter or the acid or the sweet or "anything else you please." It declares: "Such is the nature of animals and of everything; all is born thus and thus every thing ends." It enters all the crannies of everything, as ubiquitous as the new bacteriology and often as silly, eminently in therapy, in the drugs. Its advocates have a merry time deciding whether a drug is moist or dry, whether hot or cold. When once decided, of course, its action on the system has sometimes to proceed according to the principle of similars and sometimes according to contraries, which is a great help to the dogmatists, and, I suppose, must have been a great joke for the empirics. Nowhere is the lack of humor so easily demonstrated as the bane of a man as in finding one of these serious minded writers of medical literature earnestly pursuing, any time for the next two thousand years, the grave question as to what is hot and what moist, arriving at the most unexpected conclusions by the most tortuous routes, it seems to a modern. Naturally, the seasons and the weather enter into these calculations. This is especially so in the writings of Hippocrates, and here often in a very impressive and suggestive way. This is also marked in the matter of age and sex. Women and children being moist and old men being dry are included in the comprehensive scheme. Indeed, it may be seen, granted the premises, to be a very pliant and adaptable system, whereby the laymen could be easily impressed, the sceptical easily suppressed, the credulous easily led, in the lack of something better. Fully developed, as we shall later find it in Galen, there is no escape from it. In the book on *The Regimen in Health*, said by Galen to have been originally united to the *Nature of Man,* it is the dominant motif, doubtless from the same hand, but practically its application results in an excellent régime. Altogether the *Nature of Man* is made up of shreds and patches, in many parts, gleaned from and inspired by more authentic treatises of Hippocrates. In *The Timaeus,* supposed by Peterson, an authority whom Littré quotes, to have been written about 361-370 B. C., when Plato was in his old age, the four humors are accepted in their entirety as the arbiters of health and disease. From this, apparently, this critic thinks that the *Nature of Man* must have been written about 370 B. C. There seems small reason to suppose that these dates are literally correct. Students of Plato agree that *The Timaeus* belongs to Plato's old age. This internal evidence is no stronger for that conclusion than the conclusion to be derived from the internal evidence that the *Nature of Man* is not from the hand of Hippocrates, but from that of a later author.

I desire to leave for another occasion reference to the specific applications of the humoral doctrines in practice, but it is necessary to discuss some of them in order more clearly to illustrate the support practical observation and experience gave to its general principles, with which in this essay I am especially concerned. We often readily recognize in ourselves, even the most robust of us, whether the time of year is near one of the equinoxes or not, a lassitude that invades our faculties of body and mind on the intervention of a warm spell of weather at a cool season, when we have already become accustomed to the cool of the autumn or more noticeably when we have not yet lost our winter habits. Spring fever is the generic term for it. Popularly this is regarded as essentially a psychical manifestation, so far as the populace ever gives a thought to the causes of things. While the doctor is compelled, from his more well marked tendencies to lean on the materialistic, to reject this interpretation when he is compelled to an opinion and admit that this feeling of lessened energy rests upon some corporeal alteration, he seldom goes far enough to consider whether this supposed state is to be regarded as physiological or pathological. Probably the argument as to this, as to names generally, would be endless; but in modern medicine, in modern clinical experience, little or nothing has emerged in the way of etiology traceable to the effect of temporary weather or even of seasonal variations on the animal system. This is only one of the many fundamental changes which modern science has wrought, and an example, too, that such changes are not always unmixed with evil. The advent of the thermometer has driven the observation of local tissue surface variations of temperature absolutely from the field of clinical medicine. Who can say with what loss to the scientific study of semeiology? There are now signs of their returning interest.

To recur, however, to the reaction of man to his seasonal and climatic environment. So far as we touch it in modern medicine, it is chiefly in a consideration of how it affects the microorganisms of disease in their relation to man. As for local epidermal temperature changes which until now we have entirely missed in general diseases because of the clinical thermometer, so because of the test tube and the culture plate we have lost touch with the direct influence of the dry and the moist, of the hot and the cold, on the internal processes of man's economy. It was the absence of these which kept the humoral theory intact for so long. There was no interest in the long and the short; these they could determine by measurement, none as to the heavy or the light; they had scales, but no thermometer or hygrometer or viscosometer, so the warm and the moist and the viscid gave fair scope for theory. On the advent of these, on the rise of the iatrophysicists and the iatrochemists, the humoral theory entered upon the era of the discard. Plato and Aristotle in their time had balked somewhat the discussion as to the hard and the soft by some exactitude of definition. The soft was what yielded to the pressure of the finger, the hard caused the finger pulp to yield, but the rest was mere vagueness. Pestalozzi's adjuration has been ignored so far as retaining the good in ancient medicine is concerned, even though we have rejected the bad, the old inexactitude in measuring the intensity of the qualities, by means of the thermometer, the hygrometer, and many meters and scopes more. To remedy this I take it, ought to be one of the chief ends of the study of medical history. It may be that weather, temperature and moisture and thermal variations in the epidermis have no important relation to systemic disease, but that was not the belief of Hippocrates, and since we have found so many vastly more significant factors in the etiology of disease, as it now appears to us, we are quite unable, through sheer neglect and obliquity of vision, to say whether the belief in the direct influence of the qualities on the physical welfare of man, among the factors which influence it, is significant or not of something important. Now that we have disentangled and brought into plain view so many of the factors that obscured the vision of Hippocrates, we are, too, in an almost infinitely better situation of material culture, not mental culture, it is true, than were the ancients to ascertain just how much direct influence these things have which were all important to them. I think no thoughtful man in medicine will be disposed to deny that if we have gained much we have lost something as medical knowledge has evolved from the time of Hippocrates to that of Osler, and no one strove harder to recover the lost ground than the latter, while he lived.

We must understand, then, that Hippocratic medicine was justified, not only in the *Nature of Man,* but in *Ancient Medicine,* and in *Airs, Waters and Places,* in looking upon these things as worthy of the most careful attention aside from the intermediary agents upon which our attention is too firmly riveted. It was the cold, the hot, the moist and the dry, not the pneumococcus and the plasmodium, that were all important in ancient pathology, in etiology, semeiology and therapy, but the superstructure of theory upon these, built by others rather than by Hippocrates, who watched them so closely, is astonishing, not for its adaptability alone but for its stability. It lasted until within a comparatively few generations before our own. Let us pray the world will not halt that long around the beacons we are lighting in the path of progress. They have not illuminated all the dark places left by bacteriology in the causation of influenza and typhoid and phthisis, even to say nothing of poliomyelitis. Who knows what a study of meteorology, in which Hippocrates was absorbed, would now yield us?

The subject has been discussed incidentally in connection with the work of Ellsworth Huntington, and recently a careful paper (7) on the adaptability of the white man to the tropics has been again taken up after some interest aroused a few years ago by a rather inconclusive discussion in lay and medical science. Is it possible that this sporadic revival of modern interest in the general subject will supply the now missing links in the etiology of many a disease? For the humoralists it was the mainstay of the whole chain. It was the effect of the climate and the weather, or of the miasms, to get as close to modernity as possible, on the humors, causing a lowering of the percentage of the quality of one or the other, or its increase, which was what upset the equilibrium of health.

REFERENCES.

1. NEW YORK MEDICAL JOURNAL, July 20, August 10, 17, December 7, 1918; May 22, July 31, 1920.
2. *Annals of Medical History.*
3. DIELS, HERMAN: *Fragmente der Vorsokratiker,* 1903.
4. WINDELBAND: *History of Ancient Philosophy,* translated by Cushman, Second Edition, 1906.
5. BURNETT, JOHN: *Early Greek Philosophy,* Second Edition, 1908.
6. *An Italian Book on Empedocles,* Sc. Mo.
7. TAYLOR, GRIFFITH: The Settlement of Tropical Australia, *The Geographical Review,* August, 1919. See also critical note by Huntington, *ibid,* August, 1920, p. 110.

Albumin, Lymphocytic Cells and Tubercle Bacilli in the Sputa

By KUMPEI TAKEUCHI, M. D.,
Tokyo,
Director, Takench Hospital.

As Koch's tubercle bacillus is the cause of phthisis, it is needless to say that the first essential point in diagnosing this disease clinically is the finding of this very bacillus in the sputum. As a rule, even in the case of true phthisis, only a small number of tubercle bacilli can be found, and, moreover, usually they cannot be found in the first stage of the disease.

Next to the finding of tubercle bacilli, the presence of elastic fibres is considered of most value in diagnosing phthisis. These elastic fibres, however, like tubercle bacilli, are not always found, especially in the first stage of phthisis. Therefore, it is not too much to say inversely that we cannot deny the presence of phthisis, even though tubercle bacilli or elastic fibres cannot be found in the sputum.

Is there no other proof in addition to the two mentioned? Yes, there is. I will explain the necessity of a combined chemical and histological examination, not restricting the diagnosis of phthisis to the finding of tubercle bacilli and elastic fibres, and finally I will touch upon its importance.

The chemical examination consists chiefly in the albumin reaction. The histological examination is, after all, only a cellular examination. The reaction known as the albuminoreaction in sputum is a method of proving the presence of coagulative albumin—that is, the examination is based upon the fact that albuminous substances are found in the sputum of phthisical cases. It was twenty-seven years before the discovery of Koch's tubercle bacilli that Dr. Biermer called our attention to this fact for the first time, i. e., in 1855. He reported that all tracheal inflammatory troubles except bronchitis contained coagulative albumin in their secreting fluids.

After that, Dr. S. Gee (1) also wrote a treatise regarding this subject. But Dr. Wanner's article, published in 1903, forty-eight years after Dr. Biermer's publication, is of primary importance.

Dr. Wanner reasoned in his thesis, presented to the Doctor's Title Committee, that this fact was applicable to diagnosis (2). The cases he put to the test were cases of chronic bronchitis, bronchiectasis, emboli of the lung, gangrene of the lung, pneumonia, and phthisis, and there were found in cases of chronic bronchitis some patients showing albumin in their sputa and some who did not; in the entire experiment the positive albumin was found with only a difference in the quantity. In the pneumonic cases, albuminous substance was contained most conspicuously, but when separated it became negative. In the phthisical cases it was always positive, a fact which he states shows a distinction between bronchitis and the first stage of phthisis. In the phthisical cases the albuminoreaction appears in the sputum, even in the first stage.

In this regard, it seemed that the pros and cons were equally divided, but at last the former has obtained the upper hand over the latter. A great many observers have confirmed this besides the three mentioned, such as Roger, Machialoff, Raymond, Schmey, Provok, Kleissel, Hempel, Gelderblom, Lantman, Gautz, Hertz, Corner, Lacaplain, Bezancon, Goodman, Yoshida, and others, while among those opposed to this theory are Stephan, Remlinger, Acs Nagy, Hempel-Torgensen, and others, but not as many as those confirming the findings. Among the former, Roger, Machialoff (3), and Yoshida (4), state that this method of examination is worth applying not only to the diagnosis but also to the prognosis, and accordingly the symptomatic movements of the lungs can be foretold by the increase of the albuminous substance.

Schmey stated that the albumin was positive in the sputa of phthisis, pneumonia, and emboli of lung, and negative in bronchial catarrh, the diagnosis being made more accurate by the combined test of this reaction and Von Pirquet's cutaneous reaction. Corner ascertained that the albuminoreaction was positive in ninety-eight per cent. of the cases where the sputum contained positive bacilli.

Among the opposers to this theory, Stephan and Remlinger declare that the albuminoreaction is not worth applying to the diagnosis and prognosis at all, and Hempel maintains that the indication of positiveness depends generally upon the examiner's skill, for the negative changes to positive by the addition of acetic acid.

Arpad V. Bokay (5) performed a careful chemical analysis of sputa, obtaining the following:

Permillage	*Phthisis with fibrous atrophy*	*Infiltration of the apex of the lung*	*Progressive cavernous phthisis*	*Phthisis in dying condition*
Fatty acid.....	0.84	0.46	2.46	9.72
Free fatty acid	0.18	0.52	0.37	0.90
Soap	0.38	0.42	0.53	3.97
Cholesterin ...	0.40	1.61	0.17	0.14
Nuclein	0.10	..	..	0.48
Albumin	2.40	..	4.43	5.11

From this analytical table as well as from findings of the men mentioned above, it may be stated that albumin appears in the sputum of phthisical cases. A certain authority states that there is a difference in the quantity of albumin according to the stage of phthisis (6). I agree with him.

My examination, however, of the sputa of patients suffering from elementary bronchitis, laryngitis, pharyngitis, and pneumonia, shows that the albumin is positive and its substance is also fairly plentiful, not considering tuberculous cases. Moreover, the albuminous substance even in the same disease being different in quantity according to the stage of phthisis, as is known by Prorock's statement, we should in view of these facts deny the assertion that attributes the albuminous appearance or increase in its substance in sputa directly to phthisis.

Furthermore, theoretically, it would be too hasty to conclude that a case was tuberculous by only regarding the appearance of albumin, for in all inflammatory conditions the appearance of albumin or the increase in exudative fluid may not be due to tuberculosis.

We must not overlook the cells. A great variety of cells is not found in sputa. In the first instance we have epithelium.

Among this type of cell, the pavement epithelium in the mouth is always found mingling with the sputa, and is valueless from the diagnostic point of view. The epithelium of the larynx, the trachea or bronchus, is rarely found, but with the characteristic appearance of these they too are of little value diagnostically, for they can be found mingling with the spittle from a healthy body. This epithelium cylinder possesses cilia, but it appears mostly in the form of mucous cells or goblet cells, and seldom in the original shapes.

Alveolar epithelium is also seen, and these cells, which are circular or slightly elliptical with one (rarely two or three) nucleus, have minute granules upon their bodies. Though smaller than oral cavity epithelium, these cells are larger than pus globules, and have black pigment generally caused by dust or smoke. Frequently they contain small fat globules, sometimes changing completely into the cells of fat globules and mingling with the small drippings of myelin. These alveolar cells are generally contained in groups in the sticky substance of sputa. However, they exist in the sputa of patients suffering from various respiratory difficulties, and are often found, not only in simple bronchitis, but may also be seen in the spittle of healthy bodies during the morning. For that reason it is wrong to consider their existence valuable to the diagnosis. Vierordt concludes that the greatest function played by these cells is the transmutation of leucocytes, and Panizza, Fischel, and Senator, state that part of them come from the depths of the bronchial epithelium. Therefore, we cannot advocate the theory that makes use of these cells as diagnostic material.

Besides epithelial cells there are red and white blood corpuscles and pus globules in the sputa, but from these cells we cannot form a diagnostic decision.

THE WHITE CELLS.

Now, what we must finally consider are the lymphocytic and eosinophil cells. It has been stated by Widal and Ravaut that the lymphocytic excess in the pleural exudation fluid indicates tuberculosis. In 1907, Wolff-Eisner published a similar statement, but slightly different from that of Widal. He stated that the appearance of lymphocytic cells in sputa, just as in the pleural exudate, showed the disease to be tuberculous, and that lymphocytic cells did not appear in the sputa of nontuberculous catarrh, and their appearance in sputa occurred at an earlier stage than those of albumin and tubercle bacilli.

Nevertheless, the reverse is often the case. According to my findings in a great many sputa, it is rather a usual state, not a rare one, that polynuclear leucocytes and lymphocytes and eosinophile cells accompanied by epithelium are found in the sputa of the cases of simple pharyngitis, laryngeal catarrh, and bronchitis. Therefore, it is finally a question of the number of cells. And it is the question of the number of the cells of this particular variety compared with those of the cells of other varieties. In the first stage of phthisis, the proportion of leucocytes, lymphocytic cells are greater than polynuclear leucocytes.

In diseases other than tuberculosis, lymphocytic cells comprise only thirty per cent. of all the leucocytes in the sputum, but in tuberculosis they increase to more than thirty per cent., frequently increasing as high as ninety per cent. That is the state of the preponderance of lymphocytic cells. The sputum, in which lymphocytic cells comprise sixty or seventy per cent., is called a true lymphocytic sputum, and this is found in tuberculosis.

The man who insisted upon this point was Dr. John Ritter, and what he called "preponderance of those small lymphocytic cells" is an important item in examining the sputum of phthisis in its first stage. In 1914 Dr. Ritter, having closely examined the sputa of 191 tuberculous cases, declared that the increase of lymphocytic cells and the albuminous substance maintained a parallelism, by which one might well form the diagnosis of phthisis. In short, it means that we have good reason in almost all cases to form the diagnosis of phthisis when we can find fifty per cent. or more of small mononuclear leucocytes—that is, lymphocytic cells—together with the albuminoreaction in the medium degree. This finding is worth applying to the diagnosis of the first stage of phthisis when tubercle bacilli cannot yet be found in the sputum (7).

The reason for lymphocytic cell preponderance, especially in tuberculous sputa, is, as Mr. Bergel states (8), due to their containing the lipolytic ferments, and these ferments are effective in melting the cortices of tubercle bacilli. These tubercle bacilli, thus deprived of their cortices, seem to be completely disintegrated by the albuminous ferments in leucocytes.

Now I must state something regarding the eosinophil cells. It is already a generally known fact that eosinophil cells appear even in the sputa of nonphthisical cases—i. e., bronchial asthma, some types of bronchial catarrh, and laryngeal catarrh. (For instance, according to F. Müller, they comprise sixty per cent. of all the leucocytes in the sputum of a bronchial asthma.) But in the sputa of an asthmatic they are generally mononuclear eosinophil cells, and in other cases polynuclear cells. Those eosinophil cells which appear in the sputa of phthisical cases were once said to possess the characteristics of a protective power for the tuberculous living beings, and accordingly to give a clue to the resistive power of the patient and to form valuable data for prognosis.

Having stated the various views held, I shall now express my own. The point of view held that attributes albumin directly to tuberculosis is naturally annulled by the fact that albumin is often found in the sputa of various cases other than phthisis. And it does not conform to facts to diagnose a case as tuberculous by the quantitative difference of the albumin in sputum only. For instance, according to Wanner's statement, the albuminous substance in the sputa of phthisical cases has a percentage from 0.2 to 0.84, in cases of influenza from 0.18 to 1.32, and in cases of influenza pneumonia from 2.4 to 3.6 (9), and further (according to Wanner's statement) in pneumonic cases with fibrous atrophy from 0.3 to 3.0. Therefore, we cannot but conclude that the existence of the albumin alone in the sputum is insignificant from the diagnostic point of view, even though it is conspicuous in quantity. But if a large number of lymphocytic cells (above thirty per cent.) are found together with albumin in sputum, then for the first time we can suspect the case to be tuberculous. It is also the same in the following cases: In the examination of the albumin in urine we cannot diagnose a case to be nephritis, even though the albumin is positive, but we know the case to be nephritis if casts are found, and we can diagnose bladder troubles when a large quantity of the bladder epithelium is found. And in the examination of the cerebrospinal fluid, the albuminous preponderance does not suffice by itself to make an authentic diagnosis, but if lymphocytic cells are found the suspicion of tuberculosis is intensified, and if the socalled four reactions are present one may well recognize with authenticity a case as progressive paralysis. As for eosinophil cells, I will refer to this once more in my conclusion.

With this in mind I determined to ascertain the relation of tubercle bacilli, albumin, lymphocytic and eosinophil cells in sputa. I examined the sputa sent to the Hygienic Investigation Committee attached to the Hygienic Association, Nihonbashiku, Tokyo.

METHOD OF EXAMINATION.

Tubercle bacilli were dyed according to Gabett's method, using Ziehl's and Gabett's solutions. But I commenced staining with the antiformin applied to the sputum.

Albumin reaction.—Mixing decinormal physiological salt solution with the sputum, I stirred the sputum with a glass rod and filtered it. After adding to this filtrate a few drops of acetic acid (stopping when I saw a deposit), I filtered it, and applied Heller's test. The existence and quantity of lymphocytic and eosinophil cells was shown by staining the specimen with May-Grünwald's solution. The total number of the examined sputa was 132. The number of the sputa in which tubercle bacilli proved to be positive was seventy-seven, and tubercle bacilli were negative in fifty-five. Dividing these into two parts, I obtained the following result in recording the relation of albumin, lymphocytic and eosinophil cells.

(In the following list, under the title of albumin, + means the finding of albumin, and — its absence; under lymphocytic cells, + indicates a preponderance of lymphocytic cells, and — the reverse; and under eosinophil cells, + shows their existence and — their absence.)

Seventy-seven instances of positive tubercle bacilli:

Albumin	*Lymphocytic cells*	*Eosinophil cells*	*Ratio of instances*
+	+	+	55 = 71.4%
—	+	+	3 = 4.8%
—	—	+	0
—	—	—	1 = 1.3%
+	—	—	3 = 4.8%
+	+	—	9 = 11.7%
+	—	+	6 = 7.8%
—	+	—	0

(The ratio of the instances of positive albumin reaction exclusively is 95.7%, compared witht Doctor Corner's examinations.)

Fifty-five instances of negative tubercle bacilli:

Albumin	*Lymphocytic cells*	*Eosinophil cells*	*Ratio of instances*
+	+	+	5 = 9 %
—	+	+	14 = 25 %
—	—	+	5 = 9 %
—	—	—	22 = 40 %
+	—	—	5 = 9 %
+	+	—	2 = 3.6%
+	—	+	2 = 3.6%
—	+	—	0

(The ratio of a negative albumin reaction exclusively is seventy-four per cent.)

By these two comparative lists we can see that there is a conspicuous difference in the relation of those substances according to the tubercle bacilli's existence or nonexistence—i. e., when tubercle bacilli exist, the ratio of the instances which have albumin, a preponderance of lymphocytic cells and eosinophil cells at the same time, is as large as seventy-one and four tenths per cent.; and the ratio of the instances, which have albumin and a preponderance of lymphocytic cells and no eosinophil cells, comes next (eleven and four tenths per cent.); and the instances are rare which do not have them all. Does this not indicate that there is a parallelism among the tubercle bacilli, albumin, lymphocytic and eosinophil cells? The presence of eosinophil cells, however, is rather infrequent.

Among the sputa containing no tubercle bacilli, which I used for examination, there were some diagnosed clinically as tuberculous and some as nontuberculous, and there being such dissimilarity it is needless to say that the sputa containing no tubercle bacilli are not always nontuberculous sputa —they doubtlessly include the various diseases of the respiratory organs. Thus one can easily observe that, when tubercle bacill do not exist in sputa, albumin, lymphocytic and eosinophil cells are in most cases nonexistent; and next follows the case when the sputa had no albumin but did have lymphocytic and eosinophil cells. But in the latter case it may be the first stage of tuberculosis, and lymphocytic and eosinophil cells may have appeared prematurely in spite of tubercle bacilli and albumin not having appeared yet.

Following the above, the ratio of instances where albumin, lymphocytic and eosinophil cells appear though tubercle bacilli are negative, is nine per cent., but it is a question whether the tubercle bacilli were really negative and whether the test was imperfect. For this reason there is ample room for much discussion concerning instances where tubercle bacilli are negative.

In short, we can recognize one condition almost without difficulty; that is, 1, when tubercle bacilli exist, albumin, lymphocytic and eosinophil cells are also to be seen, and, 2, when they do not exist, none of the other three are to be found. And so, in examining sputum, even though the tubercle bacilli prove to be negative, we have good reason to suspect it to be tuberculous, providing that albuminoreaction and the preponderance of lymphocytic cells are positive, and we may well strengthen our suspicion if eosinophil cells are positive.

CONCLUSION.

Tubercle bacilli, albuminoreaction, and the preponderance of lymphocytic cells in sputa maintain a parallelism. Eosinophil cells also go parallel with these three to a certain degree.

REFERENCES.

1. S. Fee: *St. Bartholomew's Hospital Report,* London, 1886, xii, 99-101.
2. Wanner: *Deutsch. Arch. f. Klin. Med.,* Bd. ixxv, H. 3 und 4.
3. Machialoff: *Province Medical,* 1910, No. 20.
4. Yoshida: *Tokyo Ijishin-shi,* No. 1919.
5. Bokay: Zur Chemie der Sputa, *Pester Medz. Chirurg.,* 1879.
6. Prorock: *Münch. Med. Wochenschrf.,* 1909, No. 40.
7. Ritter, John: *Journal A. M. A.,* 1914, December 26, No. 26.
8. Bergel: *Münch. Med. Wochenschrf.,* 1910, No. 32.
9. Hayash: *Jikken-I-Ho,* No. 49, vol. v, p. 290.

25 Muramatsu Street, Nihombashi.

General Postdiphtheritic Paralysis in an Adult*

With Complete Recovery

By DAVID H. HALLOCK, A. M., M. D.,
Southampton, N. Y.

Now that the use of antitoxin has become general in the treatment of diphtheria, the serious sequelæ which used to be of such frequent occurrence in this disease have become a rarity. General postdiphtheritic paralysis in an adult presents a rather unusual picture.

Case.—L. E. R., aged fifty, married, farmer; admitted April 14, 1920, Hospital No. 4506. Chief complaint: paralysis. The family history was negative regarding present illness. The past history was also negative. The patient had never contracted diphtheria as a child. In January, 1920, a sore throat developed in the patient, which became rapidly worse, with large patches on the throat and marked swelling of the neck. A diagnosis of diphtheria was made by the family physician, who advised antitoxin. Before this agent could be administered a violent blizzard made all roads impassable for a week. During this interval the patient stated that he "hovered between life and death." When visited again at the end of the week the patient was better, and antitoxin was thought to be unnecessary. The first sequela to appear did so promptly, and consisted of a paralysis of the pharyngeal muscles which persisted for a week. Weight and strength gradually returned, and in a month the patient was able to do light work about the farm.

On April 1st, three months after the acute illness, it was first noticed that the wrists and ankles were becoming weak. This weakness gradually involved the arms and legs until the patient was again rendered helpless, being unable to help himself in any way.

Physical examination showed a sparsely nourished, well developed man, lying quietly in bed in no distress, making no movements except of head and respiration, unable to use his arms and legs for any useful purpose. Head—Eyes: pupils equal, react readily to light and accommodation, muscular action normal, no paralysis nor ptosis, vision normal. Throat: tonsils small, no pharyngeal paralysis. Face: no paralysis. Chest: heart and lungs normal to usual examination. Muscles of respiration functioning normally. Heart rate 80; sounds of good quality; no murmurs heard. Abdomen: negative, except for paralysis of the muscles of the left side. No masses; liver, kidneys and spleen not felt. There was some hesitancy in micturition, but good control. There was a complete loss of use of the flexor and extensor muscles of fingers and toes, wrists and ankles. Partial loss of voluntary motion at elbows and knees. All of the muscles moving the shoulders and hips functioned, but weakly. There was a beginning atrophy of the muscles most extensively involved, especially the dorsal interossei of the hands. The abdominal muscles of the left side were flaccid and cannot voluntarily be tightened, while those of the right side were definitely weakened. The anal sphincter functioned normally, while the vesical sphincter was slightly involved. All tendon reflexes usually elicited from the extremities were unobtainable, even by reinforcement. The left abdominal reflex was absent; the right, weak. The cremasteric was present bilaterally. Neither a positive nor a negative Babinski was obtained. Three nose and throat cultures and smears at three day intervals were negative for the diphtheria bacillus. Uranalysis was negative except for a few leucocytes.

---

*From the Medical Service of the Southampton Hospital.

Strychnine was at once started by hypodermic injection and continued to beginning toxicity and maintained just below the danger point. This point was evidenced by insomnia, nervous irritability, and vasomotor disturbances. Massage and passive motion were employed daily. No diphtheria antitoxin was administered at any time. In ten days the patient was able to sit up in bed and make coarse movements of the arms and legs, but the hands and feet were useless. Sixteen days from admission the patient was first able to grasp a fork in his hand and bear weight upon his feet without toppling over. A negative Babinski reaction appeared at this time. The muscles of the left side of the abdomen were decidedly stronger. On the twenty-third day symptoms of strychnine poisoning appeared. On the twenty-ninth day crutches were used for the first time. On the thirty-fourth day the patient first walked without crutches. Reflexes had returned at this time, but general bodily strength was far below normal. Discharged May 17, 1920. On October 1, 1920, five months after admission, the patient was again seen, and found to be in excellent condition. His work at this time consisted of picking up potatoes in the field, at which occupation he was said to be very proficient.

CONCLUSIONS.

This case is reported to illustrate several points in the treatment of postdiphtheritic paralysis:

1. Strychnine by hypodermic injection to early toxicity is the principal therapy.

2. Massage and passive motion should be employed.

3. Practically and theoretically, diphtheria antitoxin is not indicated in these cases of paralysis developing after the production of toxin has ceased. This point is shown to be passed if at least three negative smears and cultures from the site of the former lesion are negative, and no other lesion has been detected.

MAIN STREET.

A Preliminary Report on the Immunity of the Bovine Udder to Carcinoma*

By DONALD C. A. BUTTS,
Philadelphia,
Assistant Pathologist American Oncologic Hospital.

In the endeavor of medical science to cope with the socalled deadly diseases, one of the most important factors to be considered is that of etiology. If this can be ascertained at the beginning in a more or less degree of accuracy, the resulting diagnosis will be more dependable and the foundation for treatment established.

Reviewing the literature of cancer research, we find record of hundreds of investigators attempting by various methods to cure cancer, their methods in many instances lacking scientific foundation or logical explanations why their methods should exert any beneficial influence on the growth; indeed, it is doubtful if any specific treatment or cure will ever be successfully applied to malignant neoplasms, but certainly if any cure whatsoever be found aside from the knife, without first determining the etiological factor, in all probability it will be of accidental origin. Whether or not the hypothesis set forth in this report bears any true relation to the cause of cancer, I feel that in the "cause before cure" method of procedure lies the only true solution of the cancer problem.

There exists in my mind little doubt but that inflammation, whether due to traumatism, lactation, mastitis, or unaccounted for inflammatory conditions, is the exciting factor to carcinomata of the breast, the cells of which, lacking that agent which I believe to be possessed by the epithelial cells of the mammary gland of the cow, and which I have termed for the present the epithelial control, proliferate in an ungoverned manner, invading the surrounding tissues and structures not unlike the confusion and scattering of persons from a point of danger. In the cow, however, when injury of the teat or udder occurs and an inflammatory condition is established, the cells do not proliferate as does the embryonic mulberry mass, but possessing epithelial control; in other words, being governed by the innate healthy growth factor, cease their activities when the necessities causing them disappear.

Let us review briefly the comparative normal histology of the human and bovine mammæ respectively. In the woman, the breast is a multiple alveolotubular organ, which, according to some writers, is a modified sweat gland, which others claim to be a modified sebaceous structure. The normal breast (Fig. 1) is composed of lobes and lobules consisting of a number of acini of tubular or alveolar structure. The state of activity of the gland determines the number of the acini. The ducts of the mammary gland are lined with simple columnar cells resting upon a basement membrane.

---

* The writer desires to express his obligation to Dr. T. B. Rogers, Professor of Veterinary Materia Medica and Therapeutics, New York University, for his valuable help and support.

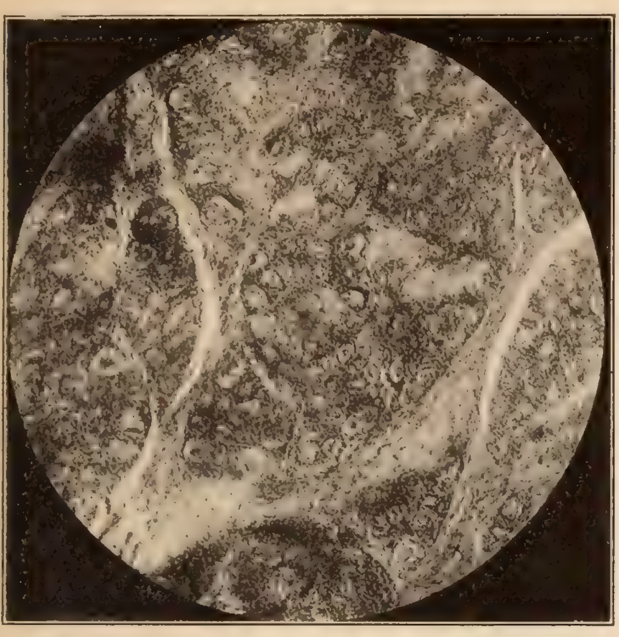


Fig. 1.—Normal mammary gland—human

The lactating gland, however, shows decided variation in the histological structure. During pregnancy there occurs a division and subdivision of the ducts and the terminal portions dilate to form the acini (Fig. 2). During lactation the acini are very numerous and will be found to differ when functioning and when at rest. While functioning the acini are lined by a layer of cuboid cells; when at rest they are lined with a layer of tall columnar cells possessing two or more nuclei. After lactation has ceased, most of the acini undergo retrogression, atrophy and disappear.

The mammary glands of the cow are popularly termed the udder. Like the breast they are modified sebaceous structures, consisting of a large number of alveoli arranged in lobules, held together with connective tissue. The alveoli are lined with glandular epithelium which differs according to the state of functional activity. The process of milk secretion consists in the throwing off the inner halves of the cells which contain the fat globules, and in regeneration of the cells from the nucleated remains of the glandular epithelium, the process corresponding to that of lactation in the breast. Thus it can be seen that it is not a histological difference which makes the bovine udder immune to carcinoma.

In the study of veterinary science the subject of neoplasms has received great attention, and from the commercial importance of the milch cow and the fact that the heavy pendant udder is much exposed to traumatism, it will be evident that pathological changes in the bovine udder have long been the subject of close investigation by the veterinary pathologist. Despite all this, there is no authentic reports of the presence of primary carcinoma of the udder of the cow. The writer doubts if this comparative absence in the udder has previously been associated with its presence in the human breast.

Does there exist in the bovine udder a substance or substances which render the gland an absolutely infertile field for the development of carcinomata? After a prolonged and careful investigation of the literature of the subject we are forced to the conclusion that the probabilities of the existence of such protective substances are very strong indeed. Investigations showed cases reported of primary carcinoma affecting practically every organ and part, corresponding to those of man, with the exception of the mammary gland of the cow.

Bovine tuberculosis has offered an extensive field for research to the veterinarian. Here the mammary gland has come into the spotlight for study. Is it not reasonable to believe that in the course of this extensive investigation that if carcinomata did exist in the udder of the cow it would have been detected?

The writer knows personally several eminent workers, who have examined hundreds of udders for the presence of tuberculous lesions, and all of them confirm the absence of carcinomata in that organ. Chronic inflammatory processes, such as tuberculosis, under certain conditions closely simulate carcinomata, making a histological examination necessary in order to make a differential diagnosis. It is on the results of such investigations that the writer bases his first claim in support of the existence of a protective material against mammary carcinoma of the cow.

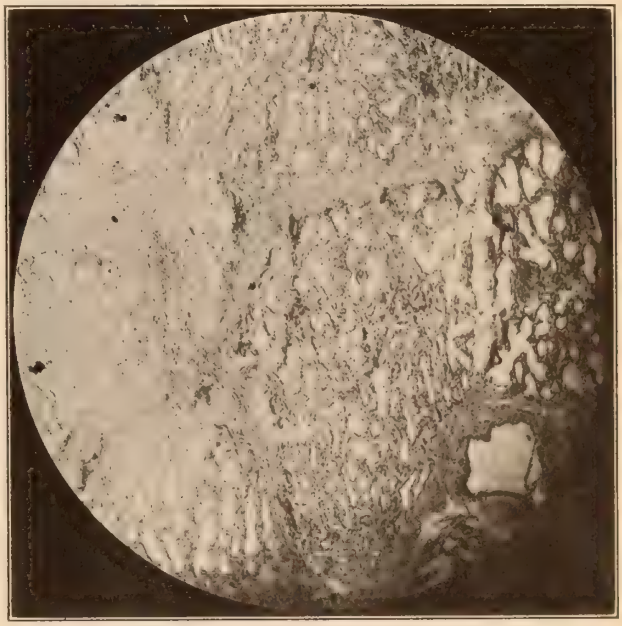


Fig. 2.—Section from breast showing advance stage of cell hypertrophy.

Statistics tend to show that carcinoma is more prevalent among women who have borne and nursed children. This not only applies to the human breast, but observations likewise show that the lower animals, especially the bitch, are apparently more prone to carcinoma after a history of lactation. Thus in dogs the most posterior mammæ, the ones most often gorged, are the ones most frequently attacked by carcinomata.

In view of this suggestion, Rodman (1) states:

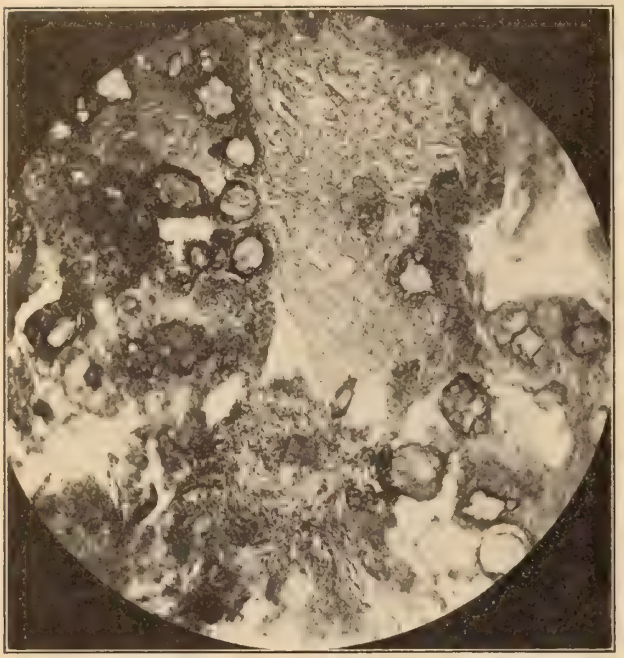


FIG. 3.—Lactating udder of cow.

"It has been inferred that a direct causative relation exists between the functional activity of the mammary gland and the occurrence of carcinoma. The periodic changes that take place in the breast as the result of pregnancy and lactation are associated with the evolution of tissue, which may predispose to the proliferation of the epithelium of the acini, thereby leading to the development of cancer. Perhaps the inflammatory process to which the gland is often subjected during the period of lactation may lead to the formation of connective tissue, which compresses the acini, produces irritation, and thus causes cell proliferation."

Supporting the suggestion of lactation being a predisposing factor to carcinoma of the breast, Gulcke's statistics show that out of 982 patients treated in Von Bergmann's clinic for mammary carcinoma, ninety per cent. had borne children. The late S. W. Gross found that 316 out of 416 women affected with carcinoma of the breast had nursed children. The writer's statistics, based on 163 cases of mammary carcinoma, show twenty-three cases occurring in single women, and 135, or 79.3 per cent., occurring in married women.

Referring to the histological changes occurring during the period of lactation, as described briefly in the beginning of this article, it is evident that such phases of evolution and involution of the breast are accompanied by considerable formation and destruction of tissue. In associating such changes with the etiology of carcinoma, the udder, whose histological changes during this period differs in no great degree from the human, offers, due to the long duration and frequency of such periods, a most favorable condition for the development of carcinomata.

In accord with the discussion on lactation, the subject of traumatisms may be appropriately discussed at this point. After the period of calving, the udder, and especially the teat, are subject to severe traumatisms by the teeth of the calf in the act of sucking. In connection with the period of calving, parturient paresis, or milk fever, is quite common, especially following the third to fifth calvings, or in the fifth to tenth years of life, but the writer is unable to find record of this predisposing to carcinomata. This apparent absence of carcinomata not only applies to conditions arising from lactation but also to other inflammatory processes to which the breast and udder respectively are subjected. Thus we find trauma, mastitis, abscess, ulcerated nipple and fissure breast as the probable causes of cancer of the breast in women, with the corresponding traumatic lesions, mammitis, and milk fever of the udder of the cow, which inflammatory diseases occur in the greater degree in the latter but without the development of carcinomata.

In reference to wounds it may be stated that the udder and especially the teat canal are subjected to traumatisms of no slight degree. Obstructions, including congenital atresia, fistulæ and true stenosis, occur in the teat duct together with papillomatous tumors. In the latter case the writer has been unable to find any record when papillomata have undergone malignant change such as occasionally happens in the human breast. It can be seen from the foregoing data that the mammary gland of the cow should offer a most favorable seat for the development and growth of carcinomata, far more so than that offered by the human breast.

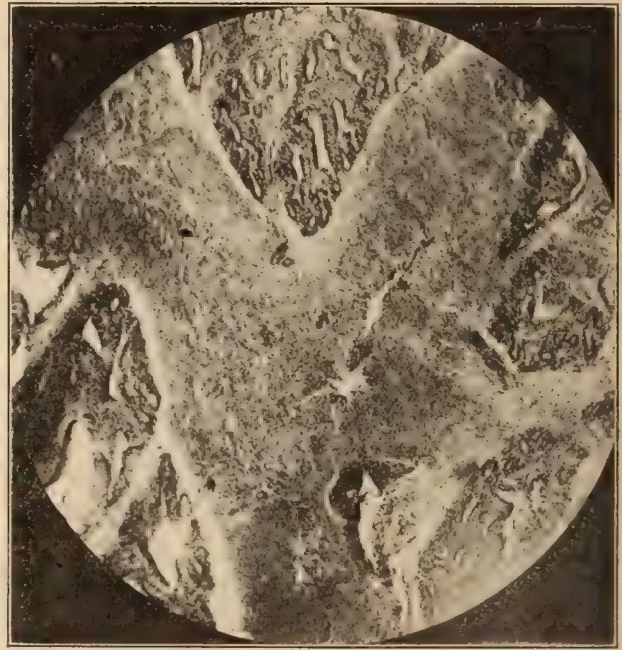


FIG. 4.—Dry udder of cow.

Likewise, histories of mammary carcinomata occurring in other animals can be traced to local injuries, retention of milk, exposure to damp and cold, or wounded nipple. To all these conditions the udder is exposed in a greater degree.

The study of neoplasms affecting the breast and udder show a striking differential feature, in the breast, with the exception of sarcomata, connective tissue tumors are benign and rare. Sarcomata, although the most common form of connective tissue tumor, constitutes only about three per cent. of neoplasms affecting the mammæ. Other tumors of connective tissue origin occurring in the breast are: lipomata, chondromata, angiomata, myxomata, and benign fibroepithelial tumors, all of which are exceedingly rare in comparison to carcinomata. On the other hand, the udder favors connective tissue tumors, the sarcomata being the most common form of mammary neoplasms. With the exception of papillomata of the teat duct I have been unable to find record of epithelial tumors originating in the parenchyma of the mammary gland. Carcinoma, as has been stated by some investigators, is a malignant neoplasm of epithelial origin, which probably occurs through increased growth activity of the epithelial cells, causing degeneration of the stroma and infiltration of the supporting tissue, which determines the bounds of physiological growth. Thus it will be seen (Fig. 3) that there exists in the lactating gland of the cow no well defined stroma, together with a deficiency of supporting tissue in comparison to the epithelial elements. From the foregoing observations there appears to be little resistance offered to the epithelial cells if aroused to a state of atypical proliferation and infiltration. The human mammæ, however (Fig. 1), show well defined stroma with abundant supporting tissue. Thus, if predisposing factors as already mentioned cause atypical proliferation on the part of epithelial cells when supported in such a manner, certainly the lactating udder, which, being subjected to a more severe form of such factors, offers less resistance to epithelial proliferation and infiltration. Therefore, under such histological conditions the writer doubts if such loosely supported epithelium as microscopic observations shows to exist in the lactating gland of the cow, ever take the first step of deviation from the normal.

It has been brought to my attention that, as soon as a cow ceases to produce milk, its fundamental and real value to the owner is lost, it then being fattened and slaughtered, thus not affording the possibility of carcinomatous development. This argument is indeed logical concerning the ordinary dairy cow, but there still exists the highly specialized breeds of cattle whose value is twofold, as milk producers and breeders. Here, if from some cause or other one or more quarters go dry, as is not unfrequently the case, the animal is not killed, but is kept, despite its lack of value as a milk producer, and usually dies a natural death. The writer has had several instances reported to him from authentic sources where all of the quarters went dry (Fig. 4), after which the cows continued breeding regularly for a number of years, and in no case was there history of a development of malignant tumors.

CONCLUSIONS.

The evidence herewith presented leads to the conclusion that carcinoma of the bovine udder has not been demonstrated.

This hypothesis may be refuted in the future through the presentation of properly (pathologically) authenticated cases, but this is very improbable in the light of the enormously preponderating negative evidence now at our disposal.

We take then as our premise: The bovine udder is immune to carcinoma.

This immunity may be due to any one of a number of different causes, and, before considering them, it is well to point out that it is not an immunity of race or species, as carcinoma of bovines affecting regions other than the udder is not uncommon.

The biologist will ask: "Is not this localized immunity due to the action and interaction of environment, the struggle for existence, natural selection, and the survival of the fittest?"

This assumption is undoubtedly in accord with our concepts of evolution. The heavy, unprotected pendulous udder, situated far back between the thighs, is constantly exposed to irritation and injury from many sources during the entire period of the life of the cow; among these we mention: Injuries from other animals, compression when in the recumbent position, friction between the hind limbs and the engorged mammæ, butting or biting by the calf in his greed for milk, and other traumata.

Now it is evident, believing as we do that irritation is the most common exciting cause of cancer, that an animal possessed of no resistance would stand less chance of surviving to propagate her species than one endowed with even a slight degree of immunity to activation of nondifferentiated epithelium, and our knowledge of the transmission of acquired useful characteristics forces the conclusion that resistance would increase from generation to generation until a satisfactory degree of immunity became fixed. So far, we are on ground that is fairly safe: The bovine udder is immune to carcinoma. The laws of evolution point the way to the acquisition of such immunity.

When we endeavor to point to the local factors which render the udder tissues refractory to nondifferentiated embryonic epithelium which has got away from the assumed force that ordains when the splitting embryonic tissue shall move forward to the production of higher forms of tissue; we leave ground fairly safe, and can only suggest that certain udder cells, udder fluids other than the external secretion (milk), the milk or some one or more of its constituents, a ferment, a selective lysin, or an internal secretion, furnished by certain portions of the stroma of the gland, or conveyed to the udder from a gland of internal secretion situated elsewhere, may determine this freedom from carcinoma.

We submit that a biochemical investigation be undertaken of the possible factors mentioned. Failing to find any of them to be the protective factor we are seeking, we shall at least succeed in narrowing the scope of our quest by excluding them.

REFFRENCES.

1. Rodman: *Diseases of the Breast*, 1908, p. 181.

Colonel Henry Smith, C. I. E., I. M. S.

By C. B. MEDING, M. D.,
New York.

Of the many visitors who have graced our shores these post war days no one has brought a nobler message than will Colonel Henry Smith, the famous Indian surgeon and ophthalmologist. He will arrive the end of April and tour the country, giving addresses and clinics at New York, Boston, Pittsburgh, Columbus, Cincinnati, Dallas, Chicago, San Francisco, Toronto and Montreal. His high purpose, enormous experience, untramelled judgment and fearlessness must influence all who see and hear him.

So great a bulk of criticism, controversy and misunderstanding has gathered about his intracapsular operation for cataract, spoken of as the Smith operation or Indian Method, so unexampled his performance of 50,000 operations, that he is generally thought of only as an ophthalmologist. But it is to be hoped he will not leave us without the benefit of his equal experience in other matters. His unique knowledge of general surgery as necessarily modified by climate, custom and isolation. Hospital economics, hospital dietetics, medicolegal problems, hospital mortality (his own results being a startling illustration), the Indian question, as it appears from his observation and study as physician and surgeon to all classes from Viceroys and Maharajas to sweepers, are some of the many problems he is conversant with. He has also had experience as railway, police and army surgeon, as friend and advisor of the civic heads of Amritsar, as the best known cataract operator of twenty-five millions of northern India.

COLONEL HENRY SMITH, C. I. E., I. M. S.

We should of course expect his teachings to be in the large; no worker can be at once master of masses and investigator of details. Colonel Smith's work has demanded resourcefulness, nerve and power. Thirty years of his life in the Punjab is a history of great daily tasks. No one man has rendered the people of India so great a personal service, and we shall be chagrined if we have brothers myopic enough to seek the trivial in so splendid a record.

Here and there through the country are men who have visited the Colonel in India, who have worked and learned and marveled as he led and taught and trained, as he advised and fathered, as, most marvelous of all, he listened to and tried out many of their sincere suggestions. We surely are excused for the prejudice of great admiration. I like to speak of him as a man, six foot four mentally, morally and physically.

Jullundur was his first station, its population almost entirely Mohammedan. Here he did the major part of his work and built the Victoria Hospital. The year following its completion he was sent to Amritsar, next to Delhi, the wealthiest, and next to it and Lahore, the largest city of the Punjab. Here, save for his war service in Mesopotamia, he has labored ever since. Notwithstanding these dozen years in the greater city, he will always be best known as Jullundur Smith.

Amritsar, a city of 160,000, about the latitude of Richmond, Va., is the capital of the Sikhs. Here, resting like a jewel in its pool of immortality, is the exquisite Golden Temple, also the extensive Sikh Khalsa College. The Sikhs are reformed Hindus. They renounced idolatry, abolished caste, and worship a sacred book called the Granth. They are a tall, handsome people, and most loyal subjects of the Empire, the one steadfast people throughout the Mutiny of 1857. Their city is a trade point and depot for the Central Asia markets and is a gathering place for merchants. Here, Kashmiris, Nepalese, Afghans, Persians, Tibetans, Bokhariots, and a hundred others attract and fascinate visitors.

The Colonel's Hospital, the Royal Victoria, is without the city gates and overlooks the Rambagh Gardens. It is built about a quadrangle, is of typical Indian architecture and possesses the Hippocratean virtues of air, water and space. Everywhere exposed to the sun, it passes through a daily sterilization. Bathed in the glorious sunlight, beds, clothing, utensils, patients and latrines lose microbes, vermin and odor and many a serious crisis is thus turned the happier way.

Its capacity of two hundred and fifty beds is increased by the use of loggias to over three hundred. The Mohammedans and Hindus have separate wards. The difference in odor of these wards frequently informs the novice as to the religion of its occupants; the daily bath of the Hindu evidenced in odorless rooms, the Mohammedan's sewed on clothes telling its scented story. Besides the wards, there are private suites, laboratories, x ray rooms, pharmacy, administration offices and two bungalows with quarters for doctors and nurse and their servants.

One or two internes and one nurse order, regulate and discipline the establishment. A number of orderlies are their busy and willing coworkers. The patients usually procure their own food, even though they buy it from the hospital, but their relatives, friends or servants always prepare and serve it. One of the strange sights is the picture of the numerous groups about the grounds cooking for their sick. Since the sexes may not mingle, one sees the father in a new rôle, that of the patient, loving nurse. There is always order and quiet. One is tempted to detail the daily life of this one nurse, it might soothe the frequently mentioned weariness of her sisters in the hospitals of our country.

The daily routine is startling in exactness and efficiency. After chota hazri (breakfast), our surgeon attends his private practice. Next he goes to court, carrying reports of injuries, necropsies, etc. Then to hospital office for examination of recruits and applicants for public service and the daily hospital administration.

At eleven o'clock the clinic begins. The crowd throngs about the operating room doors, without and within. From this assemblage there have been eliminated practically all the usual medical and surgical cases. The Colonel stands at the open door and quickly groups the cataracts, glaucomas, lid and conjunctival affections and major surgical cases. He instructs his internes and selects his day's operative work. Then tea is served and the cases discussed. (How we loved that cool shaded anteroom, the strong, hot tea and our Garu's brief reminders, an unusual but wise equipment for the day's operations.) Proceeding to the operating room, we find the first three patients in readiness.

There is little similarity between the Amritsar operating room and those with which we are familiar. Excepting for the small instrument case and lavatory, our photograph is descriptive. The room is about thirty by twenty-five feet square and, say, thirty feet in height. It has large south and west windows below and above, and its lighting leaves nothing to be desired. The tables are of wood, their tops covered with zinc. Three are used for cataract work, the patients being prepared just in advance of the surgeon's readiness. A stretcher canvas is laid upon each. The eyes are douched from suspended glass receptacles, lashes trimmed and cocaine instilled; the surgeon douches them again before operating. The nurse attends to instruments and there are no mishaps; two sets are used and no instrument touches an eye but once. I have never seen such perfection of asepsis, and it explains much besides absence of infection in Colonel Smith's eye work. Knapp reported, "The technical ability with which the operation is performed at Jullundur is marvelous." I add, "the absence of infection at Amritsar is incredible." After the bandage is applied, two silent orderlies slip the bamboo poles through the canvas loops and with scarcely a tremor the patient is carried to his or her bed.

Colonel Smith's assistant, Nur Ali, the envy of every operator who has seen him, is likewise an excellent judge of cataractus lenses. No doubt he can and does operate, but here he is the deft, silent, unemotional second pair of hands. Ninety cataracts at a single standing is, I believe, the record.

After cataracts come glaucomas and the Colonel's inimitable iridectomy. Next come two or three or more lithotrities, a laparotomy or two, a mastoidectomy, a new nose, an amputation, perhaps a joint excision. Late in the afternoon, happy and warm, a drive home to tea, perhaps a professional call or two; after tea the club or a brace of autopsies. Then dinner, a little politics, perhaps solitaire and sleep. Out of all this comes the thinking, writing, talking and the great ideal—removal of the lens in its capsule by the best and safest means discoverable.

Meeting many brilliant men, discoverers, explorers, investigators and performers, one too often finds the personal pronoun predominating. It is too often "my way," "my point," "my priority." Combative, argumentative and tenacious as he most engagingly is, this man battles for facts as against fancies, results rather than theories. Everything, even his own life work, is subservient to the ideal. Quite on a par are his modesty and generosity; for all who pass through Amritsar are welcome to see and to conquer either by amendment, elision or attainment.

The visitor must envy the Colonel his home and private office and its verdant compound. It is the usual type of Indian bungalow; quadrangular, one storied with deep porticos on three sides, an outstanding portico on the front, the whole surrounded by huge poinsettias and rose bushes and shaded by great spreading elms. Here each morning in picturesque groups gather the private patients. Without office nurse, secretary, ancient magazines or easy chairs, they await the Sahib's coming and one could never tell which had come the thousand miles or which a single furlong, for all alike were gentle, patient and confident.

We seldom saw them arrive, we seemed never to see them depart. The people of India can wake the night with drone and tom-tom and the dogs are tireless barkers, but the coming and going of both men and animals is like that of the mists—silently here, noiselessly gone.

The fame of Colonel Smith is unique. There are many remarkable operators in India and many splendid hospitals. There are besides native dispensaries, myriad traveling quacks, couchants, cutters for stone and vagrant peddlers of patent medicine, but these all vary little from the same elsewhere, their reputations are local, their methods unmentioned. But from Tutticorin to Simla, from

Bombay to Calcutta, indeed, from Port Said to Rangoon, we never had to explain, describe or identify Smith. Certainly no dispenser of blindness could teach so numerous a people the gospel of hope and confidence. In India as elsewhere bad news travels faster than good, illiteracy in India does not hinder its dissemination. For centuries her legend and lore has traveled down the generations. With three times our population and one third our area men are more numerous than telegraph poles, and thus to and fro, back and forth, news as well as ancient history is relayed with a speed that mystifies.

India presents certain inherent characteristics which must find their antitheses in the men who would successfully champion progress. Whether it be in medicine, law or public works, the native must find in his leaders those ideals he seldom cares or tries to attain, namely, honor, integrity and incorruption. So adept is he in the gentle arts of theft, falsehood and bribery, so clever in sophistry, so plausible with fallacy and withal so attractive, kind and winsome, that only the big, solid fastnesses of truth and justice can preserve his physician, judge or administrator from ruin. Here the comforts of social intercourse are at best restricted, disease and death are constant and insidious neighbors, liquor is disaster. But in return for these to the man of strength, the great mysterious continent compensates with opportunities for study and fields for experiment, elsewhere unequaled. Out of the ignorance big souls draw inspiration; in the great need ripens the harvest of service. The very hours register such leaps of progress, such blessed advancements in the health, morality and happiness of the waiting multitudes that even were there no other reward, the crowning prize of a nobler manhood satisfies.

With the fruition of thirty years of such service as his degree such a man comes among us.

113 East Fifty-fourth Street.

Report of Two Cases of Concretion of the Lacrymal Canaliculus

By EDWARD A. SHUMWAY, M. D.,
Philadelphia.

The occurrence of concretions in the lacrymal canaliculus, although known for many years, is not common. In a recent article by Nagel, the author says that about seventy cases have been recorded in the literature, of which only four have been described in North America. The two cases which I desire to report are the only ones, so far as my memory serves me, which I have met, and both were seen within the last year. In the majority of cases, the concretions have been found in the lower canaliculus, more commonly in women, and produce a slowly growing swelling, varying in size from that of a pea to that of a hazel nut. They may be accompanied by slight redness, and a catarrhal discharge, and usually are not complicated by occlusion of the nasolacrymal duct. On opening the canaliculus, a mass is expressed which is yellowish green, or sometimes brown in color, which has a waxy or granular appearance, is often friable in consistency, so that it may be broken up into smaller masses, and at times may be gritty from the presence of calcareous salts. It is not adherent to the mucous membrane, and usually there is no destruction of tissue. The condition has been known for a long time, having been described in 1670 by Cesoni, in 1779 by Sandifors, and in 1842 by Desmarres. In 1854 Albrecht von Graefe first gave a clear description of the condition, which was based on ten cases seen by him, and proved that the concretions were of organic nature. My cases were as follows:

Case I.—Mrs. J. F. G., aged thirty-six, was first seen by me in November, 1919. She had been troubled by lacrymation of the left eye, and had been treated by Dr. Ring in March of this year. According to his description the condition had the appearance of an acute infection at the inner part of the lower lid, and was accompanied by epiphora, for which she was treated by washing out the lacrymal duct, which did not seem to be occluded. Later, in August, 1919, during his absence, she was seen by Dr. Goldberg, who found an obstructed canaliculus, which seemed to be the result of a small chalazion, which was situated just below the punctum. Dr. Goldberg incised the chalazion and curetted it, and passed a small probe through the duct. The condition apparently disappeared entirely, according to his notes, which he was good enough to send me. When I saw her in November, I found a troublesome epiphora, and pus was present and could be expressed from the punctum. About four mm. back of the punctum there was a fistulous opening in the conjunctiva, from which also pus could be pressed. A small probe was passed through the canaliculus, and met with no obstruction in the duct. A part of solutions injected, passed downward into the nose, and part emerged through the fistulous opening in the conjunctiva. Further examination showed that a superficial cavity existed extending backward beneath the conjunctiva and connecting the two openings. Rather puzzled by the unusual condition, I treated it by injection of a solution of mercurophen for a time, and the amount of pus apparently lessened, but as it did not disappear entirely the patient was sent to the Lankenau Hospital, and under local anesthesia (novocain and adrenalin) the canaliculus was slit, and the cavity thoroughly curetted out. To my surprise, two small waxlike masses were discovered which showed a felted appearance, suggesting a mold, and I thought I had to do with an infection, possibly of aspergillus. After curetting the cavity, I wiped it out with carbolic acid. After this treatment the trouble promptly subsided. No further pus appeared, epiphora ceased, and a recent examination, one week ago, showed that the fistulous opening had closed, the cavity had disappeared, and the patient had had no further discomfort for over six months. The concretion was sent to the laboratory of the Lankenau Hospital, and a growth of tangled threads was secured, which were at first thought to be some form of mold, possibly aspergillus, but the cultures were subsequently sent to Dr. Fred Weidman, who has devoted a great deal of study to the higher fungi, in the Dermatological Research Laboratory at the University of Pennsylvania, and his pathological report is appended.

CASE II.—Mrs. W. C. D., aged sixty, who was first seen in October, 1920. She had been treated for epiphora of the right eye for several years, and had been treated by two eye surgeons in Philadelphia. The lower canaliculus had been slit, and the duct probed a number of times, but pus persisted in the conjunctiva, which was inflamed, and could be expressed from both upper and lower canaliculus. There was no obstruction in the nasal duct. In the upper canaliculus, however, there was a localized swelling which could not be reduced by pressure. Suspecting the presence of a concretion, I slit the upper canaliculus freely, and a hard, brownish, inspissated mass, in two fragments, was discovered. The canaliculus was thoroughly curetted with a small chalazion curette, to remove all of the concretion, and the canaliculus and duct subsequently treated by injections of mercurophen. With the removal of the mass, the pus stopped completely, epiphora disappeared, and there has been no recurrence during the last three months. Unfortunately, no pathological examination of the concretion was made.

The pathological report in Case I was as follows:

Bacteriological examination.—Direct smears from the lesion showed filaments which were suspected to be of fungous nature. The primary cultures, however, did not bear this out, for the surface and margins were smeary and moist instead of dry and fuzzy. In short, the further examinations which are detailed below brought out that the threads which were observed in the original material were the younger forms of a bacillus in threads, and that sometimes they showed false branchings. Cultures failed to produce disease in the eyes of guineapigs (7) and monkeys (3), so that we rather unwillingly (in view of the notorious character of thread organisms) concluded that the threads were secondary invaders and not the exciting cause of the ailment.

Primary cultures on glucose agar grew rapidly, thickly, diffusely; were dirty white and smeary superficially, but in deeper parts were tough and firmly anchored to the agar. Smears from the surface showed only a short rod, but when a fragment of the agar surface was broken out and examined in a wet mount, delicate filaments suggesting a fungus were made out. Stained preparations were only possible by first boiling out the agar (in dilute —two per cent.—sodium hydroxide solution) from such a clump, and then mounting on a slide and staining. It could then be made out that false branchings existed, and that both the rod and the threadlike filament had to be reckoned with. It is to be emphasized that the threads were not obtainable by simply scraping the surface—they ramified through the agar, not on its surface.

Pure culture.—The next problem was to obtain the organisms pure, but in spite of very careful pickings (microscopic) both forms (thread and rods) persisted. Hanging agar preparations solved the difficulty, the colonies being observed from day to day under the microscope, and now it developed that the two organisms were the same, one being the older and the other a younger form. The younger, peripheral parts of the colony consisted of threads, and on following the threads to the older, central parts, they were observed to become divided into short rods. At first these remained in chains, end to end, but in the center of the colony they became mixed up into a general mass. It thus developed that we had from the first picked pure, and had been unnecessarily trying to get the rods and threads to grow separately.

Cultural characteristics.—On sugar agar, twenty-four hour colony, was one cm. in diameter, translucent, and so colorless as to be visible only by tilting at just the right angle. Peripherally it showed a radiating appearance more like fungous than bacterial growth. In forty-eight hours they were up to two cm. in diameter, had a sharp wavy margin and faint, creamy brown color, deepest in centre of colony. Under the microscope the peripheral chains of bacilli and threads are arranged in wavy bundles much as Bacillus proteus. Older colonies became strongly pink. The individual bacilli were a little longer and thicker than the colon bacillus, had a central spore, and were gram negative.

Concerning the false branchings: In the centres of the colonies, where segmentation had taken place to the production of bacilli, it was impossible to decide between true and false branchings, because, occurring as the branching did at a break, it was uncertain whether the break represented an interval between two related and companion bacilli, or between chains of quite different and perhaps distant origin. It was only after having studied the nonsegmented peripheral filaments that the decision was finally made that the organism is a bacillus in threads and chains with false branchings, and not a streptothrix with contaminating bacilli. These studies were all made on living preparations—undisturbed on their substrate—for any attempt to transfer or cover by a coverslip caused a complete fragmentation of the threads, and then we had simply masses of bacilli. A close study showed that the false branchings are the result either of reduplication of filaments, or of a break which is followed by subsequent growth from either one or both ends.

To dispose of the matter of systematic position of this organism in this connection, the one fact that spore bearing bacilli developed from such threads is sufficient to exclude the higher organismal groups—leptothrix, cladothrix, and streptothrix.

ANIMAL INOCULATION.

In addition to the thread bacillus two other organisms were isolated from the primary culture: 1, a very large bacillus with rounded ends, and, 2, a short spore bearer which microscopically resembled the spore bearing members of the thread bacillus, but appeared very different in the test tube. In practising inoculations, all different possible combinations of these three organisms (seven in all) were made in order to cover the contingency of a symbiotic relationship being at work.

The left eyes of seven guineapigs were inoculated with a forty-eight hour suspension, first scorching the inner canthus with a hot needle to induce a pathological basis. The animals were observed over a period of twenty-five days, but never developed any eye symptoms. The eyes of three monkeys were also inoculated (after scorching) with the thread bacillus only, but results were negative up to eight days afterward.

Inasmuch as these three organisms appear to be nonpathogenic, further details are suppressed and no attempt has been made to determine them systematically. Without going very deeply into the subject at present, I may say that the discussion of the pathology of concretions of the canaliculus is one in which great confusion has existed, partly because of the changing characteristics or polymorphism of the organisms found, but largely because of the lack of definite knowledge in regard to them. The average pathologist says frankly that he knows nothing about them. For example, the report of the pathologist in Nagel's case, the last one reported, says: "Diagnosis mold, of the Hypomyceta family—type, streptothrix. I have not been able to make out subclassification, but it is probably bovis communis (actinomycosis)." This is of course unscientific, as the molds are an entirely different class of higher fungi, with which the organisms in question have nothing in common, as they belong to a separate class, which stand between the ordinary bacteria and the molds, in a family known as the streptothriceæ, or higher bacteria. Von Graefe, who first showed the concretions to be of organic nature, originally was inclined to identify the organism present with favus. Cohnheim regarded them as leptothrix, such as is found in the mouth, and this opinion was supported by Leber and Waldeyer, although these observers recognized that the filaments were sometimes branched. Von Graefe subsequently adopted the diagnosis leptothrix, and in a number of cases this diagnosis was followed, until Cohn (1878) pointed out the differences and introduced the name Streptothrix Foersteri, and the older literature was revised on this basis. Streptothrix Foersteri held the field until 1894, when the frequent arrangement of the filaments in rays led to the belief that we had to deal with actinomyces, and since then various observers have reported their cases as due to actinomycosis. The question has been discussed in full in Axenfeld's *Bakteriologie in der Augenheilkunde,* and he came to the conclusion that as actinomyces is probably to be considered as a type of streptothrix, the general term streptothricosis had better be employed. In many cases diagnosis has been made with smears alone, and it is impossible to differentiate the organisms, except by culture. This is often difficult, as there are frequently contaminating organisms, as in my case, and at times anerobic culture is necessary. A careful summary of the cases would seem to indicate that in only one case (that of Cannas) has a leptothrix definitely been shown to be present. In the others, it is a question of streptothrix, with actinomycosis apparently proven in some of the reports. In my case, Dr. Weidman believes that we have to do with an entirely different organism—a bacillus with spore formation, which forms long threads, so that the usual higher organisms are excluded, which would perhaps account for the destruction of tissue and the burrowing beneath the conjunctiva, until a definite cavity was produced from which pus was discharged through two openings—the punctum and the one in the conjunctiva posteriorly.

2046 Chestnut Street.

Report of a Case of Gaucher's Disease

By LOUIS HENRY LEVY, M. S., M. D.,
New Haven, Conn.

The following case of Gaucher's disease is of unusual interest because of the rarity of the condition. The name Gaucher's disease is used instead of Gaucher's splenomegaly in order to conform to Mandlebaum's suggestion (1). A sufficient number of proved cases have been reported to classify it as a definite entity. It further distinguishes this type of splenic disease from other forms of splenic enlargement. The characteristic clinical features of the disease may be sufficient to recognize it but histological proof is essential to identify it. Many cases erroneously called Gaucher's splenomegaly have crept into the literature. These have been disproved by careful examination of the clinical data or reexamination of the slides of splenic tissue. The absolutely proved cases reported to March, 1919, number twenty-one. Since then no new cases have appeared in the literature. Because of this, the case here reported may be said to be the twenty-second case of Gaucher's disease.

The patient, a woman, was first seen by me in 1916, having been referred by Dr. Henry Fleischner. At that time she was thirty years of age, a Russian Jewess and married. Her main complaint was abdominal pain. There was pain in the right side especially in the lower quadrant radiating around to the back. There was also pain in the left hypochondrium. This pain was worse on deep breathing. The duration of the attack of this pain was one week. The pains bore no relation to eating.

She had been having headaches at intervals but no dizziness. She had had occasional attacks of nausea but no vomiting. There were no night sweats and no cough. She had been having two and three hot and cold flashes daily lasting from ten to fifteen minutes, accompanied by profuse sweating. There was no palpitation, no dyspnea, no pretibial edema, no pruritus. The bowels had always been costive but moved readily through aid of cathartics. There were periods of burning micturition. She was very nervous and also complained at times of tingling of the fingers.

Past history.—No diseases of childhood. In 1908 following a twin pregnancy she was operated upon as follows: Curettage, trachelorrhaphy, anterior colporrhaphy, perineorrhaphy, left oophorectomy and Webster operation for retroflexion. In 1913 she began to complain of pain in the right lower quadrant, of a feeling as if "everything was falling out through her vagina" and of frequent painful micturition. The examination showed a large cystocele, a bilateral cervical tear, and an ulcerated cervix. After using a ring without relief she was operated upon. There was performed a dilatation and curettage, left salpingectomy, right oophorectomy, Wertheim's operation for interposition of the uterus and circular amputation of the cervix.

From 1913 to 1916 various records showed that her complaints, aside from those already mentioned, consisted of constipation, headaches, occasional diarrhea with cramps, occasional attacks of gastric distress after meals, sometimes associated with nausea or vomiting, occasional pain in the middle of her back. In several examinations made during this period there was no record of an enlarged spleen. From 1916 to the time of her last operation, November, 1920, there were periods when the patient was free from symptoms, but these periods were not of long duration. The predominating symptoms were those already mentioned in her original complaint. Beside these, she began to complain early in 1916 of bleeding from the nose and gums, which occurred at intervals. There were also insomnia, marked nervousness and weakness. Each succeeding attack of the pain in the left hypochondrium radiating to the back became progressively more intense until her last operation.

About the middle of 1916 the patient noticed an abrasion on the left leg. Examination showed this to be an infected ulceration about two by three cm. in size. It responded to treatment. In 1918 she fell and bruised this same leg, which resulted in the production of another ulcer. X ray examination of the bone showed no bone changes. In October, 1920, she complained of marked itching of the skin over the site of the old ulcer. Dr. Nadler, who saw the patient, diagnosed this leg lesion as lichenification, probably of internal origin.

Family history.—Father and mother both dead, cause not given. No history of tuberculosis or carcinoma in the family.

Menstrual history.—Menses began at sixteen years; regular every three or four weeks up to the operation in 1914.

Marital history.—Married ten years; three children, one died of heart trouble, one died in infancy, one alive and well.

Habits.—Negative.

Examination in March, 1916, showed the patient to be slightly emaciated, the face a pale *café au lait* color. The conjunctivæ were faintly icteric; no other conjunctival changes. The ears and lips were slightly cyanotic, teeth fair, throat negative, gums bled on pressure. There was no enlargement of the lymph nodes. Heart and lungs were negative. The abdomen was soft and distended. Liver edge was not felt. Spleen was felt, firm, extending downward from the costal margin to about ten cm. and six cm. across the upper part. The lower edge was at a level with the umbilicus, the inner border being about seven cm. from the midline. The surface was smooth, the notch could not be felt. There was considerable tenderness on pressure over the spleen and there were several points of tenderness about the abdomen, the most tender being in the region of McBurney's point. The rest of the physical examination was negative.

During the period from March, 1916, to March, 1920, the splenic mass did not appreciably enlarge, although no exact measurements were made. The patient improved slightly in appearance and gained in weight. The *café au lait* color of the face had become deeper.

Clinical data.—May 20, 1916, white blood cells, 8,200; polymorphonuclears, fifty-six; large mononuclears, eight; small mononuclears, thirty-six; red blood cells, 4,400,000; hemoglobin, eighty. Urine showed faint trace of albumin, no sugar, many oxalate crystals; occasional granular cast, occasional white blood cells. February 4, 1920, white blood cells, 6,800; polymorphonuclears, seventy-two; mononuclears, twenty-eight; poikilocytes, pale large cells, no nucleated reds; red blood cells, 3,200,000. March 28, 1920, white blood cells, 6,400, polymorphonuclears, seventy; mononuclears, thirty. November 1, 1920, Wassermann negative. November 20, 1920, x ray report: "The stomach is situated more to the right and lower than normal. The cecum does not appear normal in the twenty-four hour or in the enema plates. The displaced stomach in all probability is due to adhesions rather than to the mass in the left hypochondrium."

Surgical intervention was offered because of the increasing severity of the pain and the probability of relief being afforded through separation of adhesions about the cecum and if necessary removal of the spleen. The tentative preoperative diagnosis was chronic appendicitis with adhesions and splenomegaly, probably of the Gaucher type.

The operation was performed by Dr. Francis Reilly on November 29, 1920. An initial incision was made over McBurney's point and the appendix delivered through the wound. The appendix was found kinked at its first third with adhesions from this point to the cecum. The appendix was removed and the wound sutured. A second incision (the Bevan incision) was made under the left costal border. On palpation through the wound the spleen could be felt markedly enlarged. There were some adhesions from the spleen to the diaphragm and others to the left parietal peritoneum. The surface was smooth and firm. The liver was explored and found not enlarged. Some adhesions extended between the gallbladder and pylorus. No enlarged glands were palpated. With the exception of the spleen nothing abnormal was found. Upon the surface of the spleen near the notch were found a few scattered flecks of fibrin that could be easily scraped off. Because of the large size of the spleen and the possibility that this was the cause of the pain of which the patient complained the spleen was removed.

The postoperative course up to the eighth day was uneventful, the patient doing nicely. On the eighth day the patient began to complain of severe constant pain in the left hypochondrium radiating to the back. There was considerable difficulty in breathing. The temperature had risen to 101 degrees. A blood count made showed white blood cells 25,000, polymorphonuclears ninety-three, small mononuclears five, transitionals, two. Examination of the dressings and wounds showed nothing wrong. The abdomen was soft and not tender. In the region of the stomach there was marked distention suggestive of a gastric tetany.

Within a few hours in spite of treatment the patient complained of difficulty in swallowing. She was unable to open her jaws, opisthotonos was also present associated with frequent involuntary spasms of the muscles of the back and abdominal walls. The picture was characteristic of tetanus. Nine thousand units of tetanus antitoxin were administered, but the patient died thirty-six hours after the onset of the symptoms. No autopsy was obtained.

The clinical points descriptive of Gaucher's disease as given by Brill and Mandlebaum (2) are the enlarged spleen, a beginning hepatic enlargement, a wedge shaped thickening of the conjunctiva affecting first the nasal side of each conjunctiva, its base being limited by the cornea, the absence of anemia, jaundice and ascites. The patients also acquire a brownish yellow discoloration of the exposed parts of the skin. There may be bleeding from the nose and gums; there is an absence of enlarged lymph nodes and a persistent leucopenia.

In this case there was present the enlarged spleen weighing 950 grams. This is smaller than the average Gaucher spleen, which in thirteen cases analyzed by Brill and Mandlebaum was 3600 grams. The enlarged liver was absent. The enlargement of the liver occurs only when the spleen has assumed a considerable increase in size. An enlarged liver in this case could hardly be expected inasmuch as the spleen was only about one quarter the size of the average Gaucher spleen.

The wedge shaped ocular lesion was also lacking in this case. This is unusual as Brill and Mandlebaum noted it in every one of their thirteen analyzed cases. Inasmuch as no definite explanation has been made as to the nature of the relationship of the ocular changes to the Gaucher spleen, no reason can be given for the absence of the lesion in this case.

The color of the skin was neither that of anemia or of jaundice. When first seen it was a pale *café au lait* color and this had become deeper up to the time of the last operation. Ascites was never present. Bleeding from the nose and gums recurred very frequently during the progress of the disease. Enlarged lymph nodes were absent. Although when first seen in 1916 there was no marked leucopenia, this was present on two examinations of the blood four years later.

From the clinical data given above there may be readily seen a close resemblance of this case with those proved to be Gaucher's disease. From the examination of records previous to my first examination of the patient in 1916 there is no evidence of an enlarged spleen. It is very probable that this spleen was an early one and that if it had been allowed to remain for several more years the clinical picture would have been still more in accord with the composite picture in the analysis of the thirteen cases by Brill and Mandlebaum.

The spleen was submitted for histological examination to the Brady Laboratory, department of pathology and bacteriology, Yale Medical School. The report of the pathological examination by Dr. Theodore Moise is as follows:

Gross.—The specimen is a spleen weighing 950 grams and measuring twenty-three by eleven by five cm. It is normal in shape and rather pale pink in color. The capsule is everywhere smooth and glistening. There are numerous small round or oval hemorrhagic areas suggesting small hemangiomata scattered over the service. On section the pulp is rather pale and many small hemorrhagic areas similar to those described above are seen. The Malpighian corpuscles are not seen.

Microscopic.—There are numerous large polyhedral or sphenoidal cells scattered throughout the sections. These cells are closely packed in the dilated sinuses of the spleen. The cells are very large and polyhedral in shape with a pale pink staining cytoplasm and small pycnotic nuclei as is characteristic of Gaucher's disease. A few show small vacuoles within the cytoplasm. The majority of the cells are lying free within the dilated sinuses; a few are apparently adherent to the walls of the sinuses. The Malpighian corpuscles are relatively inconspicuous, but are normal in appearance. There are localized areas in which a group of sinuses are tremendously dilated and the cavities contain red blood cells and the large clear polyhedral cells described above. There is some fibrosis around these areas.

Anatomical diagnosis.—Splenomegaly, Gaucher's type.

With the similarity of the clinical data in this case to other proved cases of Gaucher's disease, and with the histological examination of the spleen showing a similar structure to cases already described as Gaucher's disease, there is no doubt that this case is anything other than Gaucher's disease and it is therefore offered as such.

REFERENCES.

1. Mandlebaum, F. S.: *American Journal of the Medical Sciences*, 157, 366, 1919.

2. Brill, N. E., and Mandlebaum, F. S.: *Ibid*, 146, 863, 1913.

1172 Chapel Street.

Report of a Case of Splenomegaly (Gaucher's Disease?)

By H. BROOKER MILLS, M. D., F. A. C. P.,
Philadelphia,
Professor of Pediatrics, Medical Department, Temple University; Pediatrist to the Samaritan and Garretson Hospitals, and Consulting Pediatrist to the Hebrew Sheltering Home and Day Nursery;
EUGENE J. ASNIS, M. D.,
Philadelphia,
Professor of Pathology, Bacteriology and Hygiene in the Medical Department, Temple University; Pathologist and Bacteriologist to the Samariton and Garretson Hospitals,
and
W. WAYNE BABCOCK, M. D., F. A. C. S.,
Philadelphia,
Professor of Surgery and Clinical Surgery in the Medical Department of Temple University; Surgeon to the Samaritan and Garretson Hospitals.

The patient, the subject of this paper, is a three-year old Italian boy, who was admitted to the Samaritan Hospital on September 22nd of last year merely for what the parents called "high stomach," in other words, marked abdominal enlargement. As to the family history, the father had died a few months before at the age of thirty-one from pulmonary tuberculosis, while the mother, one brother and one sister were living and well.

The mother reported that the child was a full term baby, and was perfectly normal in every way up to the age of one year, never having had any illnesses except an attack of colic at the age of five months, which lasted for a week. At the age of a year the child began to suffer from spasms, having four attacks during one night, the cause of which was diagnosed by a physician at the time as indigestion. For one year following this illness, in other words, until the child was two years old, there was a rapid and progressive enlargement of the abdomen. At the age of two years both ears started to discharge, and this condition had persisted irregularly ever since, but during this time, that is, during the past year, the abdominal enlargement had progressed more slowly. The child's digestion had been particularly poor, and he had been markedly constipated during the same length of time.

On admission to the hospital a careful physical examination was made, with the following results:

Skin of exposed parts had a yellowish brown color; peculiar expression of face, that of happiness and yet of thought, more like an adult; marked perspiration; right ear discharging freely, and evidence of recent discharge from left; marked pulsation in the neck; trunk barrelshaped; marked dyspnea; heart and lungs normal; liver enlarged; spleen enormously enlarged; extremities covered with petechial hemorrhages.

The patient was referred to Dr. Luther C. Peter for an ophthalmological examination, who reported as follows: "eyes show no marked pathology. The conjunctiva, both bulbar and tarsal, however, is anemic; the sclera very white. The fundus examination is practically negative aside from rather marked pallor which is present throughout. No macular disturbance is visible in either eye."

He was then referred to Dr. Babcock for examination and opinion as to the advisability of operation, and he advised that, although the child's condition was very poor, he felt as I did, that an operation was his only possible chance. Von Pirquet and Wassermann reactions were negative; the ears were examined and treated. An x ray of the abdomen was taken by Dr. Bird and his report was "enlargement of spleen and liver, but no information as to etiology obtainable."

A blood examination was made by Dr. Asnis with the following results: Hemoglobin thirty-five per cent.; erythrocytes, 2,112,000 and pale; leucocytes, 8,400; anisocytosis, present; polychromatophilia, present; macrocytes, present; normoblasts, occasional; small lymphocytes, thirty-five per cent.; large lymphocytes, thirteen per cent.; large mononuclears, four per cent.; polynuclear; neutrophiles, forty-three per cent.; basophiles, one per cent.; transitional, four per cent. In addition the blood of both the patient and his mother was found to belong to group IV.

Mandlebaum and Brill being considered by many the greatest living authorities on Gaucher's disease, it may be well to call attention to the symptoms present in this case which, in the opinion of these authors, are diagnostic of this condition, and also to those that were absent which they claim are usually present.

The following symptoms are said by Mandlebaum and Brill (1) to be present in cases of Gaucher's disease, and were found to be true in our case:

1. The onset of the attack was so insidious that it was difficult to determine just when it began.
2. The age (three years) was before the age of twelve.
3. The enlargement of the liver and spleen was such that the trunk was definitely barrelshaped.
4. The color of the parts of the skin exposed to light was yellowish-brown, or ochre.
5. There were numerous ecchymoses.
6. There was marked perspiration.
7. Ascites was but slight, if present at all.

The following symptoms are said by the same authors to be usually present, but in our case were absent:

1. Female sex.
2. Familial occurrence.
3. Brownish yellow wedgeshaped thickening of the conjunctivæ.
4. Bleeding from mucous surfaces.

As to the blood examination, Mandelbaum and Brill state that a leucopenia is usually present, but our patient had 8,400 leucocytes; the average total count of polynuclears of all recorded cases was sixty-six per cent., our case had forty-three per cent.; small lymphocytes averaged twenty per cent., our case thirty-five per cent.; large lymphocytes averaged thirteen per cent., our case had thirteen per cent.; eosinophiles occasionally one per cent., our case had none; normoblasts were occasionally present, our case had an occasional one; average number of red cells in all the recorded cases 3,700,000, our case had 2,112,000; average hemoglobin percentage in all the recorded cases sixty-five per cent., some being as low as thirty-five per cent., which was the percentage present in our case.

Of the eleven symptoms mentioned as being usually present seven were present in our patient, and on the strength of this a clinical diagnosis of Gaucher's disease was made. Of course, Banti's disease was thought of, but this is rare before ten years, and the yellowish brown discoloration of the skin of the exposed parts is not present. In addition the spleen in Banti's disease—while it may be very large—does not reach the size it does in Gaucher's disease.

After being in the hospital twelve days, during which time his temparture varied between 98 degrees and 101 degrees, his pulse between 90 and 165, and his respirations between 25 and 45, the patient was transferred to the surgical department. Immediately following the operation his temperature rose to 104 degrees but within thirty-six hours it dropped to normal, and stayed there during the remaining eight days the patient was in the hospital.

From reports received after leaving the hospital he apparently was doing well but he died very suddenly about a month later. He lived out of town and the cause of death could not be ascertained.

PATHOLOGICAL REPORT.

The pathological report submitted by Dr. Asnis is as follows:

The spleen was markedly enlarged, weighing about 1,800 grams. The capsule was smooth throughout, and did not appear thickened. The organ was of dark red color. On section the tissue presented a homogeneous appearance, with minute dark red areas (small hemorrhages) irregularly distributed, and most marked near the capsule. Histologic sections showed the following:

1. Enormously dilated sinuses; the cells lining them appeared large and swollen, and some contained several nuclei.
2. A diffuse infiltration of endothelial cells throughout the splenic pulp practically replacing the Malpighian corpuscles. In addition there were found irregularly distributed areas of pigmentation.

The trabeculæ were not particularly prominent.

Conclusions: The universal infiltration of endothelial cells, the dilated sinuses, and hemorrhagic areas, plus the blood findings, suggested the diagnosis of Gaucher's spleen.

Remarks: Because of the extreme rarity of this affection and the numerous types of splenomegalies, sections of the spleen were submitted to Dr. Mandlebaum, of New York, who stated that, in his opinion, it was not Gaucher's spleen but probably some form of leucemic splenomegaly.

SURGICAL REPORT

Dr. Babcock's surgical report follows:

The patient at the time of operation was a pale little child, about three years of age. The abdomen was greatly distended, and the subcutaneous tissues were somewhat edematous. Petechial areas were present on the extremities. The mucous membranes were pale. In view of the thirty-five per cent. hemoglobin and 2,112,000 red cells, it was deemed wise to transfuse the child during the operation, and depend chiefly upon local anesthesia, reinforced by a small amount of ether.

A transverse upper left abdominal incision was selected, and the abdominal wall infiltrated with 100 c.c. of one half of one per cent. procaine, with adrenalin. The patient was given, during the course of the operation, two ounces of ether. At the beginning of the operation 200 c.c. of citrated blood from the mother, who typed the same as the child, was run into a vein in the child's arm.

The spleen, which weighed about four and three-fourths of a pound, was nonadherent and was easily delivered. The surface was smooth, the edges thick and rounded, and at the pedicle were several marblelike accessory spleens. As is not unusual, the tail of the pancreas partially occupied the splenic pedicle, and was ligated in the splenectomy. The liver was large, extending several centimeters below the costal margin, had a smooth surface, with a thick rounded edge, and was of pale yellow color. The spleen was readily removed without complication. The wound was closed in layers without drainage.

The postoperative course was uneventful, except that the child insisted on sitting up in bed the day after operation, and, as restraint was difficult, he was permitted to move about in his crib thereafter. The wound healed primarily, and the patient retained a voracious appetite during his convalescence.

Points of surgical interest are the freedom from adhesions such as are usually noted in splenectomies for Gaucher's disease, and which usually are present to some degree in splenic anemia, and the presence of the accessory spleens, which were sacrificed.

CONCLUSIONS

What is the value of splenectomy in promoting longevity in Gaucher's disease?

If it is true, as the few reported cases might indicate, that the average duration of life in this disease is nineteen years, the argument for early operation loses much of its force. The immediate operation mortality of the splenectomy is probably not less than fifteen per cent., and it is questionable if, in view of this surgical risk, much is gained by the operation. In the present case, however, the great abdominal distention, the associated dyspnea, and the evident progress of the disease toward an early fatal issue, were strong factors in determining the operative course.

REFERENCES.

1. MANDLEBAUM and BRILL: *American Journal of the Medical Sciences*, 1913, p. 863.

1734 SPRUCE STREET.

A Review of Carbohydrate Metabolism as Related to Diabetes*

By FRANK P. KNOWLTON, M. D.,
Syracuse, N. Y.

Carbohydrate foods constitute the bulk of our ordinary diet. They furnish two thirds of the energy which the body requires. It is an interesting fact that these foodstuffs which thus play such a preponderating rôle in our nutrition are stored in the body in much the smallest amounts. Carbohydrate is present in the body chiefly as dextrose in the blood and as glycogen in the liver and muscles. There may average three hundred grams of glycogen, about equally distributed between the liver and the muscles, and perhaps three hundred grams of dextrose in the blood. Even including the glucose in combination as glycoprotein, the total amount of carbohydrate in the body is relatively insignificant in comparison with the total weight. The reason for this surprising difference in proportions between intake and storage is twofold. In the first place, carbohydrates are most easily and rapidly oxidized, and secondly any surplus is readily changed to the more stable form of fat. According to the now generally accepted glycogenic theory of Claude Bernard, the glucose of the blood is kept within its narrow limits of .08 per cent. to .1 per cent. through the ability of the liver and muscles to take up any excess as it is absorbed from the alimentary canal, dehydrate and condense it, and store it as glycogen. This glycogen may be again broken down to glucose whenever the percentage of blood sugar is lowered. The first process is glycogenesis, the second glycogenolysis. An enzyme, glycogenase, has been identified as responsible for the latter process.

The sources of glycogen are primarily and mainly the carbohydrates of the food. At least in cases where these are deficient in amount, certain of the organic acid radicles, resulting from the deaminization of protein may be changed to glucose and contribute to glycogen formation. Upwards of fifty per cent. of the energy of the protein molecule may thus be changed to glucose. Concerning the formation of glycogen from fat there is not complete agreement. Lusk and others maintain that at least in diabetes there is no evidence that fats increase the sugar output. In these ways the small but remarkably constant carbohydrate of the blood is carefully guarded. Its significance lies in the fact that it is the supply of potential energy ready in easily oxidizable form for the immediate needs of the tissues.

Our incomplete understanding of the normal functioning of the kidney makes it impossible to formulate a satisfactory statement of the part that organ plays in conserving the organism's supply of dextrose. Some have argued for a colloid sugar compound which because of its large molecular size does not pass through the kidney. If such a compound exists it must be a loose one as the glucose can be readily separated from blood by dialysis. Others point to the fact that normal urine contains a small amount of glucose, a per cent. not much below that of blood. In either case the kidney may be entirely passive in its normal relation to glucose, acting normally to filter the water and constituents of low molecular size without expenditure of energy on its part. According to the conception of others, the kidney acts like a dam to hold back sugar up to a certain per cent. When this is exceeded, to carry the simile farther, the sugar runs over the spillway. At any rate, whichever explanation we may tentatively adopt, we must recognize that when blood sugar rises abnormally, that is, when we have hyperglycemia, then the normal kidney actively excretes glucose and may concentrate it in the urine to a per cent. many times greater than that in the blood. A persistent hyperglycemia without glycosuria can only be explained on the basis of impaired kidney function.

The ability of the organism, then, to utilize completely the carbohydrate of the food depends partly on the rate of absorption, partly on the rate at which the tissues can remove the absorbed glucose from the blood. When the rate of intake at any time exceeds the ability of the body to oxidize or store it, hyperglycemia results, usually with glycosuria. The maximum amount which the body can dispose of within a given time without glycosuria is called the assimilation limit or tolerance of the individual for carbohydrates. This assimilation limit varies for different carbohydrates, depending chiefly on the rate at which they are absorbed. With normal individuals there is no assimilation limit for starches and often none for saccharose except the ability of the individual to eat, digest, and absorb. The necessity for digestion so slows absorption that its rate does not rise above the glycogen storing powers of the tissues. Even for dextrose which requires no preliminary digestion there is no limit for many healthy adult males. Taylor and Hulton report the giving of five hundred grams, the physical limit of ingestion, in five instances and found glucose in the urine of only one. In cases where the sugar-handling mechanisms are below normal, however, these large amounts cause glycosuria. Clinically, when the ingestion of 100 grams of glucose on an empty stomach causes hyperglycemia and glycosuria the individual is considered as at least potentially a diabetic. It should always be remembered that if absorption is delayed even such a lowered tolerance may not be evident. Such delayed absorption may even be at the basis of certain types of socalled increased tolerance. To avoid this uncertainty, Woodyatt perfected an interesting method by which glucose is given intravenously by apparatus which injects at a constant rate. His finding in animals and man is that amounts up to 0.8 grams to 0.9 grams to the kilo. an hour can be assimilated over considerable periods. From the data thus obtained he calculates that a man weighing seventy kilo. resting in bed, can receive and utilize sixty-three grams of glucose an hour without glycosuria. This represents an energy intake of 252 calories an hour or 6,048 calories a day. When the injection rate is increased and hyperglycemia maintained there are evidences that when present in excess in the blood, sugar may exert toxic effects. At least in those with restricted tolerance a continued forcing of the sugar handling machinery is found to result in its breakdown, with further lowering of tolerance. Whether a persistent forcing of the glycogenic powers may lead to a breakdown in a healthy person is not known. It is stated that the increase in the use of sweets which has followed the passage of the Volstead act is accompanied by an increased number of cases of diabetes. If this is true, it may be due to the tendency of those with lowered tolerance to become actual diabetics under such conditions.

---

*Read as part of a Symposium on Diabetes, before the Syracuse Academy of Medicine, December 7, 1920.

Experimental glycosuria is of interest because of the light it throws on diabetes. We may produce glycosuria in the following way:

1. *Alimentary glycosuria.*—This form of glycosuria is produced by exceeding the assimilation limit as described above. Its interest to clinicians lies only in the testing of tolerance, and in the possibility that its frequent appearance may lead to fatigue and the establishment of tolerance at still lower levels.

2. *Phloridzin glycosuria.*—This follows the administration of phloridzin. At least primarily, its action is limited to the kidney which is stimulated to excrete the blood sugar. This results in a lowering of the blood sugar, a hypoglycemia. The liver glycogen supply is then drawn on, and by repeated doses of phloridzin the animal can be made to excrete both the carbohydrate of the food and that which is stored in the form of glycogen. The sugar from protein sources is also involved and a completely diabetic dextrose nitrogen ratio obtains. Acidosis secondarily results and further complicates the picture. Although this type of glycosuria has been of much experimental value it is doubtful if it has any relation to diabetes except to the rather uncertain type of renal diabetes.

3. *Glycogenolytic glycosuria.*—Glycosuria may result from such procedures as cause a sudden mobilization of liver glycogen. Claude Bernard's diabetic puncture of the floor of the fourth ventricle, the injection of epinephrine, asphyxia, anesthesia, fright, and acidosis all produce glycosuria by causing the liver to suddenly discharge its glycogen as dextrose. Many consider that there is a definite center in the medulla which controls the process of glycogenolysis. It has been pointed out that as normally operative it constitutes or governs an adaptive mechanism through which in time of stress or sudden demand for energy, the liver mobilizes its reserves for the use of the tissues. The above procedures result in glycosuria if the liver contains glycogen but are ineffective in its absence. The glycosuria which follows such procedures is transient. It apparently finds its parallel in such cases of diabetes as are associated with some involvement of the nervous system.

4. *Pancreatic glycosuria.*—The removal of the whole or the major part of the pancreas causes a condition which most closely parallels diabetes mellitus. We do not seem to be much nearer a solution of the question of how the pancreas functions in this respect than we were when Minkowski discovered the relation. It is generally taught that the tissues lose their power to burn sugar and as a consequence hyperglycemia and glycosuria result. The glycogen of the liver disappears indicating a disturbance of its glycogenic powers. This view that the tissues cannot burn glucose arises chiefly from a study of the respiratory quotient which is generally lowered in pancreatic diabetes indicating a failure of the carbohydrate burning powers. This results in a stimulation of sugar producing metabolism and sugar is derived from protein. As the diabetes is more severe the amount of protein thus contributing to the glycosuria is increased. On this account Lusk proposed the dextrose nitrogen ratio in the urine as an index of the severity of the condition. On a carbohydrate free diet a dextrose nitrogen ratio of 3.6, or in some cases 2.8, indicates a complete loss of ability to use glucose and was designated the fatal ratio. Whether isolated tissues completely lose their power to use sugar is uncertain. At least they seem to store glycogen, and this makes the problem difficult.

The pancreas may be considered as playing its rôle in carbohydrate metabolism either by taking something from the blood or giving off some enzyme or hormone to it. Although there are many indications that an internal secretion is formed by the pancreas, it cannot be said that conclusive proof has yet been furnished. If a hormone is formed by the pancreas, it is not stored by the gland in any great amount but is given continuously to the blood and is rapidly taken from the blood or destroyed. At present, on the basis of the experimental work being done, there seems to be no hope from glandular therapy. It may be noted in this connection that no drugs, enzymes, or yeasts have been found to restore the lost function or replace it. The only treatment on a scientific basis is the dietetic.

Acidosis is so frequently associated with diabetes that it requires at least a word of explanation. It arises mainly from the incomplete combustion of the fats. Apparently fats may be completely oxidized only when carbohydrate is being simultaneously burned. As one writer has expressed it: "Fat only burns completely in a fire of carbohydrate. If the carbohydrate fire lags or goes out as it does in diabetes then the fat fire smokes. The smoke is oxybutyric acid."

It is not possible at present to state the relations of the endocrine system to carbohydrate metabolism. Removal or hyperfunction of several of these glands has been found to affect carbohydrate tolerance. Injection of extracts of some of them causes glycosuria. How far this is a primary and specific action on carbohydrate metabolism or how far it is secondary or related to a general depression or augmentation of body functions or to impaired absorption, it is impossible to decide. In this connection, Lusk says: "The subject of the correlation between the various glands of internal secretion is evidently one as replete with opportunities for the play of the imagination as it is for enlightening experimental research." It is toward such enlightening research that we must look for the solution of these perplexing but important problems.

Endocrinology and Its Practical Application

By D. M. KAPLAN, M. D.,
New York.

Endocrinology is the study of diseased functions and must not be confounded with those end products of long standing error which produce the permanent changes in acromegaly and Addison's disease. These diseases are end products, and as such cannot, and actually do not, open the door to this study; on the contrary, when this stage is at hand the entrance to the study of endocrinology is shut. We must search *ab initio* the human organism for the dormant causes of these diseases and apprehend in its infancy what is likely to become a future irremediable calamity. For this purpose it is necessary to begin with the therapeutical materials with which endocrinologists have to work.

I shall endeavor to place before you the information which I have obtained from the literature and from the experiences of my friend and teacher, Dr. Joseph Fraenkel, of blessed memory, as well as my own observations, covering a period of almost twenty years. Like any student of a new subject, the endocrinologist must be on the *qui vive* and keep his eyes open. He must ask ceaselessly why such symptoms exist, and correlate logically the various findings which come to his notice. I shall endeavor to place before you certain facts from branches of medicine and biology which, at first sight, may seem to have no direct connection with clinical endocrinology. For instance, many people believe that the acne of pubescence is a blood condition more or less associated with the development of the sexual glands. A boy's parents will often discuss this feature of John's pimples behind closed doors. Thus the layman's primitive knowledge is very often in reality the underlying cause of more than one subjective and objective disturbance. In biology one finds that in the male goldfish during spawning ripeness a crop of pimples develops on the cheeks. You also know that the average healthy woman at the menses always shows what they call a blemish on the skin which closely resembles an acne pustule, which usually appears on the chin on the left side near the angle of the mouth. Those in whom this blemish develops on the forehead or chest cannot claim a perfectly normal gonadal apparatus, functionally speaking. Those who make an attempt to apply these gonadal phenomena to the cure of pubescent acne will not be disappointed, as has been my gratifying experience in a few instances of which I shall speak later.

Another interesting endocrine coincidence, though a remote one, may be found in the case of the socalled anencephalic monster; in this condition the gray matter is chiefly affected and is either very primitively developed or entirely wanting. Strange as it may seem, one usually finds with this an undeveloped state of the complete absence of the cortex of the suprarenals. Why should the adrenal cortex keep pace with the cerebral cortex? Those who follow my way of thinking will realize that I am trying to bring about some kind of a functional partnership between the adrenal cortex and the cerebral cortex.

I take it for granted that you all know that the cortex and the medulla of the suprarenal glands are originally separate organs. This is still the state of affairs in certain fishes. Such is also the case embryologically, for they are derived from two different areas, the cortex from the mesoderm cells of the genital ridge, while the medulla hails from the layer from which the bloodvessels, muscle cells and the sympathetic nervous system receive their origin. No wonder that the active principle of the adrenal medulla has such a marked effect upon the muscle fibres, particularly of the vascular system, as well as upon the muscles of the intestinal tube. Inasmuch as the adrenal cortex and the interstitial cells of the gonads have a unilocular origin, it is to be argued that they also have a functional interrelationship. On the other hand, the sympathetic nervous system, having a common origin with the medullary part of the adrenals, is logically also functionally interrelated.

An interesting phenomenon must be explained which is the appanage of chronic adrenal disease, such as Addison's disease, and which is commonly called bronzing of the skin. A very important biological fact sheds a light on this question; and the connection between the skin in this instance has been worked out biologically by no less an authority than Abel. He, as you know, was the first to discover the blood pressure raising principle in the medulla of the adrenals; he also found that the skin of the water toad, *Buffo aqua,* contains a blood pressure raising substance which is capable of action in a dilution of one in 250,000. I must tell you that the real chemical radicle or pressor nucleus of this substance has a still greater functional activity and is an ordinary amine to be found in the intestinal tract as a byproduct of bacterial life. This chemical is betaiminazolylethylamine.

Now what has the bronzing of the skin and mucous membranes in Addison's disease got to do with these facts? Simply this: The adrenal medulla is not working properly, and the body, in order to maintain life, needs the pressor principle of this medulla, which cannot furnish enough for physiological needs, hence the chromaffin cells multiply in numbers until they are visible and constitute the bronzing of the skin in Addison's disease. I designated these cell deposits as melanoblasts and believe them to be an index pointing to something abnormal in the adrenal apparatus. A blood pressure raising principle, by way of emphasis, has been isolated from such dark cell deposits. We can now say that the pressor principle isolated from the skin of the *Buffo aqua* finds its analogy, although rather remotely, in the melanoblastic cell deposits in the skin of human beings in the course of an adrenal inadequacy. We shall not lose sight of this phenomenon in designating and classifying individuals under the various tropisms. While, in this article, I intend to ignore end products, Addison's complex is included; I nevertheless am ready to avail myself of every bit of information that this adrenopathic disease offers and make an effort to unravel the mystery which surrounds its incipiency.

I must again point out the relationship between the adrenal cortex and the gonads. In extirpation experiments it was found that the removal of the testes was followed by an increase in the size of the adrenal cortex, which makes one suspect an antagonistic action between these glands. In other words, given a diminished gonadal activity, an increased function of the adrenal cortex is to be expected. In this connection please bear in mind the curious coincidence found in the anencephalic monster and the cortex of the adrenals. Another feature which I have been able to demonstrate is the effect of adrenal cortex upon the nerve endings of the small intestine of the guineapig. One tenth of a milligram in solution dropped upon the intestine produced most violent peristaltic contortions which in turn were almost instantaneously inhibited by a few drops of adrenalin, one in one thousand. Here is another valuable point which may give one plenty of food for speculation and therapeutic application. The opportunities for study and investigation in the realm of endocrinology are almost endless, particularly when one attempts to analyze the cause of every expression of comfort and discomfort in health and disease. Unfortunately we cannot discern the vast majority of phenomena which take place elsewhere than on the surface of the body and must resort in these instances to those few tests which have as yet only a quasi usefulness. This applies forcefully to the significance given to blood pressure changes. But we have entered the labyrinth and hope that our ingenuity will lead us out of the perplexing situation with a store of information astonishing to the uninitiated.

To give you a slight conception of the tastes and distastes of people who are endowed with a poor thyroid, I will place before you the results of a very simple experiment. Pancreatic extract breaks up starch into sugar. A given quantity of starch will be broken up into so much glucose. The latter can be measured quantitatively by the well known copper reducing tests. It was found that when thyroid extract was previously added to the pancreatic juice to be tested the latter did not fully convert the given quantity of starch into glucose, and that a lesser quantity of copper was reduced. It is clear that something must have happened to the pancreatic extract, and this something, as many of you may have surmised, was an inhibition of the pancreatic amylolytic powers through the addition of the thyroid extract. Now of what utility is this observation in clinical medicine? Simple this: If the pancreas does not work well in its amylolytic functions, we are justified in assuming that in certain chosen instances a greater quantity of thyroid extract is finding its way into the circulation, and if the condition is just the reverse, and the patient can get away with a large amount of carbohydrates, then we conclude that his thyroid is below par. You will find clinically that the great majority of socalled hypothyroid individuals relish everything sweet, and I have treated a case where the man who suffered from severe attacks of angina pectoris, and who was totally cured by thyroid extract, was in the habit of adding a few lumps of sugar even to his soup. On the other hand, in cases of pure Basedow's disease, the patients rarely use sugar with their food or drinks, for the reason given above, namely, that the pancreas cannot digest the starches due to thyroid interference, as it would without such a handicap.

As psychoanalysis attempts to bring to the surface the unconscious mechanism of the mind, in like manner endocrinology externalizes what is going on among the various secretory functions in the body. They control development and determine the functional equilibrium. It is in my mind absolutely impossible to picture a human being who could be designated as an example of the truly normal average. Such a human being is still a hypothetical question and will forever remain an unknown quantity. I make these statements because I want to emphasize that endocrinology is the study of individual individuals, whether healthy or not. To treat one on such a basis we must divorce our minds from rules and regulations which presuppose the existence of a normal average and make an attempt to discover what the normal average would be for the patient under consideration. The Russians have a saying, "What is life to a Russian is death to a German," and the endocrinologist can say with safety the same thing in treating beginning forms of endocrinopathic states. I shall, therefore, not attempt to lay down rules, but will furnish you with a few endocrine tools and tell you to "do likewise." Do not for a moment believe that my knowledge of the subject was obtained through unqualified successes; on the contrary, many failures showed me where I was wrong, and a great many orthodox medical notions had to be eliminated, root and branch, before I could see clearly.

Two things, however, stand out as distinct handicaps in studying internal secretions from an etiological and therapeutic point of view: one is the blind adherence to the wisdom which emanates from the postmortem room, and the other is an attempt to reconstruct the etiology and receive therapeutic information from a study of the final end product of long standing disease. It is unfair to form an opinion of a play when one sees the last act of the drama, and many socalled teachers of endocrinology feed the less informed with pictures of acromegaly, with the distorted functions in Addison's disease and the psychomotor upheavals in Basedow's disease. To be able to judge the full display of changes from the normal to the distinctly abnormal one must see the thing from the beginning and view the prologue, if possible, in childhood, even in infancy and parentage. And as true benefactors of humanity we must believe that charity and Christianity are synonymous and that the atheist makes the poorest physician. We must respect not only the finished product called man, but treat gently and handle tenderly every part which has been placed in him by a wisdom superior to ours. We cannot afford to remove an organ because its function is unknown to us, and because its removal is free from immediate disaster, but must resort to such drastic measures only when it is unquestionably an obstacle to health and a menace to life. All this is endocrinology.

In the days of not so long ago such words as idiosyncrasy, habit, accident, neurasthenia, immunity, and predisposition, were the bywords for little understood complaints and the unforeseen changes in disease. Now it is quite different. These words are used with extreme caution, and the doctor tries to look deeper into the patient's history and attempts to correlate his sufferings into an intelligible story and adjust the sum total of inconveniences by timely advice, using all known methods which tend to improve. Being charitable, he does not discard the teachings of any school, although it may be at variance with his own special training. If you believe that all disturbances of an endocrine character can be adjusted by means of animal extracts, you are entirely on the wrong track. On the other hand, if you insist that the homeopath never did any good, I say that there are none so blind as those who do not wish to see, and it is much safer not to look down upon anyone, and always to be willing to accept and discover the healing good that is in all schools. I will show you later how these various nonallopathic schools bring about their results. For the present I shall continue to disclose to you those things which I consider indispensable to endocrinology. It is a known fact that the striking difference between the child and the fullgrown individual is chiefly in the display of gonadal functions. The initiation of these functions and their subsequent resignation at the advent of senility is known to endocrinologists as the gonadoadvent and the gonadopause. Both transitions, from childhood to adolescence and from the latter to senescence, are accompanied by functional upheavals or storms, which for a short time make the individual uncomfortable in more ways than one. These periods I designate as the first and second gonadal crises, respectively. During these periods great harm can be done to the functional mechanism of the body, and much care and skill is required to bridge over this dangerous period. It is incumbent upon the mother to prepare her daughter for her first gonadal crisis, and the same is to be done by the careful and intelligent father regarding the development of his son. Many moral and socially intricate problems arise at this period, but it is a parental duty to inform the developing child of the cause of certain phenomena. If this information is lacking, then the family physician is to be called upon to advise the parent, not the child, for the latter is more likely to be shocked than benefited by the introduction of a stranger into his innermost secrets. It is distinctly a parental duty. In a badly managed case, given a fertile soil, the seed for the development of exophthalmic goitre or dementia præcox is planted by the ignorant and overconventional father or mother. One or two years before and up to five years after, unexpected functional and mental shocks will begin to bear fruit years later, and no one will even suspect that the vasomotor unrest or the mental depression is to be placed to the account of a shock experienced during the first gonadal crisis. A careful questioning will always reveal this early factor. Shock, pubescence, and femininity are the cornerstones upon which the future structure known as exophthalmic goitre rests, and those aberrant forms appearing in men are usually devoid of the genuine earmarks which stamp the real disease. The chief clue to their masked and unreal trouble is the comparative ease with which one is able to influence this disease in the male. It is almost axiomatic that a uterus is as necessary to the existence in pure form of exophthalmic goitre as the thyroid gland itself. I admit that one sees occasionally in males what to all purposes is a real form of the disease; but here the doctor must be prepared to bear the burden of proof regarding the patient's unquestionable masculinity. You will here and there find signs indicating that the patient under consideration is by no means a complete male. He may possess a gynecomastia or display a hypogenitalism, or a female distribution of pubic hair; or he may go along without needing a shave oftener than once in five or six days, or have the reputation among his friends of being effeminate. In a vigorous male, functionally and structurally complete, the disease which requires a uterus as a starting point will never develop. Should tachycardia, exophthalmos, or even a goitre, develop in such an apparently complete male, you will find that the obstacles to recovery are comparatively easily overcome, and such things as rest, diet, change of climate, or quinine hydrobromide, will accomplish in a short time what as a rule is rarely accomplished in the woman with such manifestations. The seasoned endocrinologist is not impressed with such successes in the male, nor does he take stock in the therapeutic empiricism which is built upon the shifting sands of reported cures of pseudo forms of exophthalmic goitre.

In a closer analysis of this disease one will find that the clinical manifestations of hypoactivity and hyperactivity often coexist in the same patient. This has been demonstrated by Rothschild and Levi in many of the cases studied by them. As a matter of fact, we find not only oversecretion and undersecretion of the thyroid gland in the makeup of the Basedowic, but we can discern here and there phenomena that have been produced by other glands of internal secretion. We see in the blood pressure changes and in the skin a thyroadrenal collaboration, in the frontal headaches and eye manifestations a thyropituitary interplay, while in the metrorrhagic or amenorrhoic type with hot flushes a distinctly thyrogonadal situation. After carefully considering who and what exophthalmic goitre implicates in its panorama of static and functional abnormality, and you will logically conclude that to treat a case of Morbus Basedowii empirically is to suffer from a therapeutic myopia. You will also learn at a very early date that the endocrine products singly or combined will not furnish relief in the genuine disease, and only here and there will an endocrine product offer a chance, provided you are treating an impure form of the trouble or one of the many *formes frustes*. In this connection one will have an opportunity to treat those aberrations from the classical disease in patients who present menstrual deficiencies and complain of acneform pustules appearing a few days before and lasting for a week, more or less, after the flow. Ovarian extract given by mouth in fairly large doses, say ten grains a day for a period of from five to ten days, will give one the impression that something is being done for the patient's tachycardia, but with it the young lady will begin to complain that the pimples are getting worse instead of better. Should this happen, you have then accomplished what in my opinion is a beginning of a cure, which will be followed by a consistent and gradual increase in weight, color, and endurance. The pulse will return to 80 or less, the vasomotor reaction will be less dermographic and diffuse, and the menstrual phenomena will assume a normal aspect. In order to gain the cooperation of the patient the doctor ought to forewarn her and predict this increase in the acne, and impress upon her mind that the beginning of a cure will be initiated by a more or less discomfiting skin eruption. This acne may remain for a year or two, but will gradually disappear without dermatological therapeutics. I have in mind four such young ladies, all of whom have since married and one of them the mother of a boy.

It seems to me that the thyrogonadal form of Morbus Basedowii is perhaps the least difficult to manage therapeutically, and is also the form in which endocrine products offer a greater return than in the other varieties of the trouble. Here again you will be confronted with the biological situation spoken of before in connection with the acne of pubescence, and you will be able to put two and two together more intelligently than had you not known these endocrine coincidences. Apparently, the functions of the gonads have something to do with the skin, and in its relationship to thyrogonadal Basedow it serves only as an indication that the thyroid gland received a check in its malfunction, and that the situation, in so far as the function of the gonads is concerned, has been rejuvenated and made to assume an expression of youthful activity, analogous to that obtained during the first gonadal crisis, or puberty, or gonadoadvent. I must warn you, however, that every Basedowic cannot be treated with ovarian extract, even though the case may be an imperfect example. This will be especially apparent in those dark complexioned, stiff haired, birth marked patients, whose chief inconvenience is a fatigue bordering almost on collapse. If you draw their attention to the many discrete and small brownish spots, they will occasionally tell you that they have noticed a gradually increasing number of these marks, and if you search carefully for them you will also find a few on the mucous membranes. You are dealing with an adrenal Basedow, one of those severe and therapeutically difficult instances of this manysided disease. The least effort, physical or mental, renders them *hors de combat,* and the physician who handles the case commits the most glaring therapeutic indiscretion by the mere mention of the knife. Can you picture to yourselves the result when such a patient is actually confronted with an operation? They are doomed before the instruments are sterilized. It is your humanitarian duty as physicians to be able to recognize them at once, and deal with them with extreme gentleness and conserve their energy by all means at your command. This advice has a greater application than the mere management of a Basedowic. You will come across patients in whom the melanoblastic deposits will develop during any exhausting illness. This may be the result of the course of the disease, such as is often seen in a bad case of diphtheria or typhoid, or it may be the result of the patient's adrenopathic constitution, who will show these spots when in a state of comparative well being, or these spots will appear as a result of the physician's shortsightedness in overdosing his influenza patient with aspirin or underfeeding him in the attempt to starve out the diabetes.

The why and wherefore of these spots is as follows: You are acquainted with the bronze spots in Addison's disease, and you are instructed in the schools of medicine that they are an accompaniment to the chronic forms of adrenal decay. This is true to a certain extent. When I maintain the view that these bronze spots, or, as I designate them, melanoblasts, are hypertrophied cell deposits which are present in the skin and along bloodvessels and are related to the chromaffin cells in the adrenal glands and compensate for their deficiency, I am supported in this by no less an authority than Adami, as well as Abel. It has been definitely demonstrated that wherever chromaffin cells are found a blood pressure raising principle is also obtained. The reason for this is to be found in a study of the embryology of such cells. A wandering of neuroblastic cells takes place before the neural folds have united to form the future spinal cord. Along the structure which is to become in the near future the spinal cord neuroblastic cell conglomerates arrange themselves on either side of this tissue. These cell masses form the future sympathetic ganglion chain and assume the structure of nerves. Some of these elements from the identical embryonal area retain their cellular form and acquire an affinity for chromic acid and its salts. They are found in greatest abundance in the adrenal medulla, but also in smaller numbers along bloodvessels and in the skin.

I hope you have followed me in this exposition closely enough to gather the facts necessary to establish a relationship between the bronzing of the skin in Addison's disease and the adrenal decay of the patient. If you will further remember that all chromaffin cells yield a substance almost identical with adrenalin and that bronze spots or, as I call them, melanoblasts, are related to the cells in the adrenal medulla and are called upon to help or for a time to supplement the dying functions of the adrenal medulla, you will readily conclude that whenever these spots develop in the course of a disease something must have happened in the suprarenal glands requiring assistance from the skin deposits capable of furnishing a blood pressure raising principle. So that, when I warn you to look out for these spots and change your method of treatment and functional interpretation, you will see that I am defending your patient's most important organ, his suprarenal glands. I advise you to administer suprarenal gland extract to a dark complexioned child with diphtheria, particularly when you have a Sergent line, and also to the typhoid or influenza patient, as all these clinical conditions have a tendency to cripple the suprarenal apparatus and with it the vasomotor function. Go slowly with the dietetic treatment of diabetes, particularly when the loss in weight is accompanied by a development of melanoblastic skin deposits.

Very often one is able to help along considerably by the judicious administration of suprarenal extract by mouth, provided the situation has been recognized in the beginning, when the vital forces have not been sufficiently depleted to offer a poor soil for therapy. The treatment is to be instituted in every instance where one obtains a white line upon scratching the skin, no matter what the cause of the original disease may have been and regardless of previous therapy. It is my firm belief that in this way we are making an honest and rational attempt to help the adrenal apparatus out of a difficulty which, unaided, may have dire results.

In the beginning of this article I used the word tropism without an endeavor to explain its application in endocrinology. The closest analogy which appears to me adequate to convey its fullest function is the word tendency, or the term chemotaxis, as used in biology. I wish to bring out certain endocrine tropisms which exist between certain constitutions and infectious diseases. The period during which this endocrine designation takes place is usually during infancy, and the constitution of the child even at this early stage of life shows its directing influence as to which infantile infection or infections will be accepted and which not. It must not be taken for granted that I harbor the conception that a child will escape contagion under extraordinary circumstances, such as epidemics or engrafting methods; what I wish to convey is the endocrine predetermination of infantile diseases, or, rather, that the constitution of the child is fit for one kind of an infection in preference though not to the entire exclusion of all of the rest. So that, the adrenotropic child will invite diphtheria, and all of you know that this infectious disease attacks the vasomotor apparatus through the adrenals in a marked degree, even causing death by severe adrenopathy. Examine such a child and you will find our old friends on the skin in the form of small or large melanoblasts; scratch the skin and you will get the Sergent line. Should you be brought in contact with a situation of this sort, the adrenal exhaustion may be successfully treated by the timely administration of suprarenal extract by mouth. Should you find the vasomotor apparatus sufficiently impaired to demand immediate assistance, give two or three minim doses of adrenalin chloride hypodermically. The latter is not to be continued for more than twenty-four hours, and should be administered by the attending physician and not by the nurse, unless the latter is competent to gauge the results of the hypodermic therapy, as well as be able to detect the indices for the administration.

The thyrotropic child is preeminently a measles attractor, although one often gets the history of no diseases of infancy at all, and then again measles, whooping cough and chickenpox. The genuine form of Morbus Basedowii usually develops upon a constitution which in childhood presented one of the thyrotropic infections. This anamnesic feature gives one an additional support upon which to build up the endocrine tropism of the patient. I warn you, however, not to be overenthusiastic nor assume for a moment that the tropism of a patient implicates the one designatory gland solely to the exclusion of the rest; this is by no means the case, for you cannot implicate a single given gland in a hypofunction, hyperfunction, or dysfunction, without causing an immediate response in the remainder, and very often the disturbances of the glands secondarily involved are more serious than in the originally disturbed gland. This is one of the reasons why I have mentioned the thyrogonadal form of Basedow's disease, in order to point out the importance of treating the gonads instead of the thyroid, giving passing notice only to the apparently much distressed thyroid gland. Why the thyroid manifests the phenomena obtained in Basedow's disease I do not know, but I know that no gland works independently of the rest, and in certain constitutionally predisposed, i. e., thyrotropes, a gonadal defect will also bring about thyroidal phenomena.

In the pituitotrope individual scarlet fever or smallpox played an important part during infancy. Again I remind you that one may show in his growth, disposition, tastes, teeth, and digestive apparatus, distinct pituitotrophic tendencies without having had scarlet fever or smallpox. You must gauge such an individual from another angle, and determine his tropism from his manifestations as mentioned above. His childhood is full of sore throats and inflamed tonsils. I do not accept in using this term an overaction nor an underaction. The situation may be a single or a double one, the same as in the case of the thyroid gland where overaction and underaction display their phenomena side by side.

In mentioning the tonsils as an appanage of the pituitotropic individual, I voice the sentiments of my master, Dr. Joseph Fraenkel, who repeatedly pointed out the functional connection between the gland in the cranium and the glands in the throat. I am certain that you all know of the existence of hypophyseal tissue in the upper part of the pharynx from which portion of the embryo the pituitary gland is subsequently formed. Whether it is consistent with your experience or not, the tonsils have something to do with the pituitary gland, and being approached with much less difficulty than the pituitary gland, one is tempted or prompted to assail this organ and disregard entirely the gland originally diseased. Add to this other considerations, such as the comparative innocuousness of the procedure, the relative physiological unimportance of this tissue, reported successes of cures in well chosen instances, and one's mind is definitely settled that the tonsils' chief purpose is to cause trouble, and, therefore, must be removed. Please do not misconstrue my message nor the purpose of my defense of the tonsil. There are instances of supreme urgency where to leave the tonsils *in situ* would be worse than folly, but do not forget the fact while advocating total removal, that, regardless of our ignorance of the functions of this adenoid structure, we must attach at least that importance to it and treat it with that consideration which is due to anything with which the Supreme Wisdom found it necessary to endow us. We should at least give it the consideration due to an excretory, if not an endocrine, organ, and leave it in when life and health are not directly jeopardized by its retention within the body. At least I am of the belief that the tonsil secretes a necessary principle, although it has not been extracted and subjected to the tests in vogue for such provings, nor does extirpation furnish results immediate and proximal enough to assign to it the importance of an endocrine gland. The trouble lies in the fact that we require immediate harm from its extirpation, and if harm in a remote organ does occur we prefer to assign to it an independent origin. So that the doctor keeps on treating tonsilloprive headaches with the coal tars and other depressants, not knowing that the pituitary is giving rise to all the trouble, nor does he even dream that a fulminating pus appendix is likely to follow such an operation.

The pituitary, the tonsil and the appendix are functionally somehow related; what the total symptomatology amounts to when one or the other of these structures fails to perform its duties properly is still a moot question, but fragments of the structure are nevertheless to be had when a closer functional study of them is pursued. Supraorbital headaches of a severe form will not infrequently develop in the tonsilloprive person, and will give the doctor a therapeutic task not easily shouldered. Gas and distressing abdominal cramps with borborygmi have been observed to follow upon the heels of tonsillectomies. I cannot say that pituitary extract is the only drug for these conditions, but very often half a grain of the extract once or twice a day for a few days only will suffice to impress the doctor with its usefulness. So strong was my teacher's conviction in the utility of the tonsil and its protective influence over the appendix that he refused to recognize the possibility of the development of a purulent appendicitis in a patient in whom the tonsils were intact. Only where the latter were destroyed by disease or removed by the surgeon would pus develop in the appendix, according to him. I leave it to you and those who wish to benefit by his great conservatism to develop further this conception and possibly furnish sufficient evidence to save the innocent tonsil from the guillotine. One was bound to be impressed by the forcefulness of his logic, backed as it was by a tremendous clinical experience of over thirty years. If my presentation impresses you with the fact that the tonsils are removed more often than is absolutely necessary I will rest contented, and sooner or later you will be gratified by having subscribed to this belief. A stronger plea is untimely at present and would tend to produce friction where cooperation is desired.

In his moments of inspiration Dr. Fraenkel often gave us a mental treat equal to nothing we have had elsewhere, and I am about to recount one which will be of use to the medical artist in his work and will in general give you a something to go by in your constitutional interpretations. To begin with, you know that the internal secretion of the adrenals is chiefly concerned with a pressor molecule, i. e., it supplies the energy to muscle analogous to the gasoline in your automobile tank, which by timed and regular explosions compels the piston to descend in the cylinder and revolve the crank shaft. The adrenal secretion does to the muscle fibre what the gasoline does to the piston: it makes it work, and consequently is justly called the energy giving principle of the body. My teacher would designate energy as being synonymous with the adrenals. Again the thyroid was concerned chiefly with equilibrium in general and also quality. In like manner the pituitary was endowed with the regulation of mass or bulk as well as with rhythmicity. The latter is the peculiarity of certain biological phenomena which occur at certain given time intervals, the menses for instance, or from a pathological point of view, periodical headaches, or anything which has a periodical occurrence. While emphasizing this periodicity which is supervised by the pituitary gland, I distinctly remember an old lady of over sixty years who had pains in her shoulder every morning, disappearing as noon and evening approached, which were promptly influenced by small doses of pituitary extract. The pains which gradually increase in severity towards evening will not be influenced by the pituitary administration, but will give way under judicious therapy with thyroid extract. I am speaking of the chronic forms of joint pain, for in acute articular manifestations one should never prescribe thyroid extract, and the same applies to acute sore throats. What severe diphtheria does to the adrenals a bad case of mumps will accomplish with the gonads. In the latter, such an infection in a child stands out as a voucher for the individual's gonadotropism. If the patient happens to be a girl, you will be able to discover without going very deeply into the maze of endocrine lore some menstrual abnormality; later on there may develop an ovarian abnormality which will necessitate a surgeon's interference.

A knowledge of endocrinology will often enable one to differentiate between ovarian neuralgia and appendicitis in the virgin. I take it for granted that everyone nowadays has become proficient in the use and interpretation of Head's zones, which are so essential in the differential diagnosis of visceral disease.

The gonads, according to my teacher's opinion, represent immortality and the perpetuation of the ego and their activity serves as the greatest incentive to the world desire to live. Their somatic function is to preserve the race and psychically their normal activity bestows upon the possessor an equanimity and mental poise so different from the less balanced individual that it requires little knowledge to be able to analyze the reason for the difference. This opens the chapter of the dark volume where the psyche of the man or woman suffers as a result of improper gonadal activity, or where it became extinct before it had an opportunity to fulfill God's mission. The brooding disposition, together with a tedium vitæ, often are the precursors of the sinful impulses which ultimately end in suicide. They know subconsciously that their aim in life is without a purpose, and that their ego is to cease with themselves, and that to them immortality has not been granted. The sweet conspiracy which man and woman enters into and in which their combined ego will be lived over through posterity in the form of a child, to them is only a mirage. No wonder that such people go about gloomy and despondent with an empty gaze and hopelessness in every word and act. This does not close the chapter of gonadotropisms by any means, for one must not forget that the greatest misfortune to the mind of man is brought about by an improper interplay between the gonads and the adrenals. Whether a timely recognition of the tropism of the individual and properly selected endocrine therapy could defer or prevent dementia præcox is still an unsolved problem, but, as in everything else attempted by man, there is hope. In this connection the adrenal cortex and the cerebral mechanism display their relationship in a pathological fashion caused by a cessation of normal reciprocal activities.

The functions of the thymus relate to juvenility, its persistence often bringing about a delay in pubescence. One so endowed will display the rotundity and color observed among children. This phenomenon is due to the organic arsenic inherent in thymic tissue which supplies a socalled natural Fowler's solution whenever necessary. Thus the thymus is the appanage of youth, and prevents the wear and tear and decay of the body. Is the thymus present in the aged? Of course not; but its activity during its term of office is enough to set aright the subsequent work of all the cells in the body. With the disappearance of the thymus, the gonads assume control and continue through the sexual period, which in turn is ended by the advent of suprarenal supremacy, which lasts until the individual dies. You will note the tropisms during these periods of life, and discover the pink cheeks due to the thymus, the vigor and sprightliness due to the advent of the gonads, and the spots on the skin and increased blood pressure when the adrenals assume the upper hand. We have before us a sort of checking system, the thyroid puts the brakes on the pancreas, the thymus must let up in its activity before the gonads can fully develop their mission in life, the adrenals have a pronounced checking influence upon the secretion of gastric juice, particularly hydrochloric acid. In this connection it is clinically interesting to follow up certain instances of heartburn, constipation, and other manifestations known by the conglomerate term of nervous dyspepsia. In the experiments of Cannon one fact attracted my attention. He studied animals exposed to fright and ascertained the adrenalin content in the blood and its effect upon digestion. This American Pawlow carefully controlled his experiments and was able to show an increase of adrenalin in the blood after an animal was frightened. Together with this fright he also determined that the digestive functions were below par, and actually obtained marked differences in the hydrochloric acid content of animals thus frightened. To me this served as a stimulus to ascertain the cause of this clinically obscure state. Why does one present the features of a vitium adrenalis with heartburn, difficulty in digesting simple foods, and constipation? The mere tropism of these patients prompted me to administer to them small doses of suprarenal extract and watch for developments. The therapy was not entirely empiric, for they presented well founded indications for the use of the drug. For instance, the first patient was sixty-three years old, an engineer, had a blood pressure of 110 systolic, suffered from nightly attacks of asthma, and had to sit up in a chair, otherwise the coughing spells would come too often and keep him awake. He had numerous melanoblasts on his skin, and a right inguinal hernia the size of an orange, which was kept in place by a truss. His diet consisted of the simplest food. He had not tasted meat for over a year, and he had to use enemas and cathartics to make his bowels act. He was given one third grain of the extract of the whole suprarenal gland once a day only, and the promptness with which he reacted to the treatment was little short of the miraculous. The next day he stated that he did not have to sit up the whole night, but could sleep in bed without coughing for a few hours. Three days after the first dose of the drug he reported that his food did not distress him in the least. The next day he ate some meat and at the end of the week he indulged in shell food of which he was very fond. This did not give him the least inconvenience, and to all intents and purposes, I concluded that for this patient at least the endocrine interpretation had done some real good. As a matter of fact, when the drug was stopped after having been used for two weeks, and when the condition showed a tendency to recur, a few doses of suprarenal extract accomplished the desired effect, and thus we had his abnormality well in hand. To those who require the test tube and the burette to celebrate a therapeutic victory I may add that his total acidity before treatment was 108/40 and 74/40 free hydrochloric acid. One month after treatment his acid values were 88 and 46 respectively.

Another case was that of a man of thirty-seven, a tailor, who suffered from the most severe gastric spasms and acid eructations after the smallest morsel of meat. He lost weight considerably, as he was kept by his previous physician on an absolute milk and cereal diet. He presented a skin full of melanoblasts and extreme hirsutes over the entire chest and most of his back. His blood pressure was only 94 systolic. He complained of a constant burning weight under the pit of his stomach, and presented the subjective complaints characteristic of the candidate for a gastric ulcer. He showed a total acidity of 142 and free hydrochloric acid 86. He was given twice a day one sixth of a grain of suprarenal extract by mouth, and at once began to show an improvement in his subjective condition. At the end of six weeks' treatment he was pronounced cured; his total acidity sank to 98, and his free acid to 50. Fourteen months after this treatment I heard from him through a friend that he is in perfect health, has gained weight, and eats everything.

I believe I am justified in designating such clinical conditions as an adrenopathic hyperchlorhydria on the basis of Cannon's experiments, where the situation is the direct obverse, i. e., too meagre a supply of adrenal secretion permits the hydrochloric acid secretion to be formed in pathological quantities, producing the heartburn and other distressing manifestations, just as the oversecretion of adrenaline as a result of fright, strain or overwork will produce an inhibitory effect upon this digestive substance.

All this you will acknowledge is function, here and there interspersed with laboratory facts, and not a single item dragged from the postmortem room. I will yield to no man in respect for the men who spent their time in the dead house, but progress is inexorable and many beautiful, altruistic conceptions will have to remain barren facts devoid of all therapeutic importance. I do not want to appear iconoclastic nor a pedant, nor an empiricist; all I strive for is therapeutic progress, and my embracing the opportunity to study this subject with the great clinical mind of my teacher gradually opened a view which later became the basis of constitutional interpretation, designated as endocrinology.

Regarding the therapy of the gonadal acne spoken of in the beginning of this presentation, I recall two very instructive instances. The first one concerns a girl of fifteen who was virtually covered with a dirty, yellowish green acneform eruption from her forehead down to the upper part of her chest, front and back. She had had measles at five, and nothing else (this makes her a thyrotrope). Her menses appeared at thirteen and from the start lacked rhythmicity, appearing once in six or seven weeks. She was placed first on thyroid extract, one fourth grain once a day for one week, and this was followed by ovarian extract. Her menses became normal, and remained so up to the present. When she presented herself in March, 1919, her skin condition was a sad spectacle, and when she was discharged in July of the same year not a trace of the former acne was to be found.

Another instance of this discomfort was noted in a young man of nineteen who fortified himself morally and is still celibate. He had a very ugly acne on his face, ranging from angry looking pink elevations to pustules one fourth of an inch in diameter. In three months the skin cleared up and now is entirely clean. The place where the acne was originally can be discerned in numerous shallow pits which are beginning to disappear under homeopathic treatment with sulphur. As the doctor's mission is an unequivocal altruism, I could find no reason why homeopathy should be neglected in this instance, for his story coincided with the totality of symptoms that homeopathic sulphur cures. I applied the drug in his case without feelings of remorse and without the slightest notion that I was outraging allopathy. I was not going to run the chance that my patient would eventually seek the help of a homeopath and show me that another doctor could accomplish what I could not. You will find in a number of homeopathic drugs the most potent aids in the treatment of chronic disorders, and in endocrine practice we find Ferrum metalicum in thyroidal tachycardias, as well as Spongia tosta, of the greatest help. In pituitary headaches associated with the formation of great quantities of gas you will find that ordinary homeopathic lycopodium is capable of removing this distress from your patient with marvelous promptness, and moreover such a thing accomplished will rarely recur. In sulphur we have the strongest skin remedy, particularly in those patients in whom you will find sweaty, malodorous feet, and in whom taking a bath is an event. In puny children with frequently recurring running noses and coughs, graphites is as much of an endocrine working drug as thyroid extract, the only difference being that its effects are much deeper and alter the constitution of the patient to such an extent that the adenoid vegetations disappear and the tonsils assume a normal, healthy look.

The congenital gonadopath shows unmistakable signs of the interplay between the sex glands and the rest of the endocrine system. Without further emphasis, the pituitary will come in with its state of functional aberration and give rise to a train of symptoms, and the adrenals will bring in their increased phenomena. The woman whose photograph is shown herewith never menstruated, and it can be seen how this permitted her adrenals to stamp her with a distinctly masculine exterior. She showed an undeveloped uterus and the adnexa could not be palpated.

She is of particular interest from a dental point of view, as she showed what I have designated as agonadodontia, in a communication entitled An Endocrine Interpretation of the Dental Apparatus. Investigating the teeth, we find that the upper lateral incisors reflect the functional integrity of the gonads, so much so that when I was confronted by eight patients in a certain hospital and was told that among them there was one who had a cryptorchism, you can imagine the surprise of the staff when I picked out the one who was so afflicted, by a mere inspection of the teeth, asking no questions whatever. In the photograph presented you will note that both upper laterals are gone, but I learned that they had never erupted. Her gonadal condition was determined before the gynecologists reported and who corroborated by a bimanual examination what was previously determined endocrinologically. In order to render it possible to recognize this feature, as well as to enable you properly to interpret the significance of the teeth in connection with the study of the gonads, it must be borne in mind that the tooth need not be absent; in fact, absence in an adult is as rare as a uterus bicornia or absent ovaries. It is enough for the gonadodont to be stunted in development or anterolaterally twisted, and, furthermore, the relationship is a crossed one. So that when you find a left upper lateral twisted, you will find the right ovary implicated. Now you will understand the value of these observations if you correlate them with a pain encountered near McBurney's point and perhaps a coincident hyperacid stomach with slight nausea. How often is the appendix removed with fewer manifestations than these. The surgeons can answer better than I. Up to ten years ago a patient of mine had twelve attacks similar to the ones described above, all in two years. I considered the attacks purely ovarian and the consulting surgeon was not permitted to operate. The patient is well and, up to the present time, free from all complaints. Here are two examples of endocrine situations, the first one a congenitally insufficient misfit, the second one a sufferer from ovarian neuralgia, and whereas nothing can be done with the first, the reverse is the case with the second, but conservatism will have to be the chief guiding point in both. In endocrine studies one must carefully consider the time of life when a certain abnormality began its crippling of the functions. The woman in this case would never have developed hands so typically masculine and the upper lateral incisors would certainly have erupted had the condition been an acquired one. In former times one did not expect such changes in the woman who had a double oophorectomy at the age of twenty-five. She will most likely begin with a series of frontal headaches, fainting spells, and will suffer much from gas. These phenomena are signs of pituitary action devoid of gonadal influence. If one analyzes the course of pregnancy in a woman one is bound to be impressed with the exterior resemblance of this physiological episode and the pathological appearance of the pituitary disease known as acromegaly. However, here I must emphasize that when the gonads have developed fully and the pituitary becomes the seat of disease, the sex glands suffer little, and vice versa, should the sex glands be congenitally absent—as in the woman cited—then the pituitary gives little trouble. If the pituitary becomes diseased in early life, before the gonadal advent, then one obtains a sad picture of the boy in the stereoscope, a condition known as adiposogenital dystrophy, for which there is no cure. The operation in his case was performed to save his eyesight, and possibly his life. It seems to me that adiposogenital dystrophy is not a single disease, and although the pituitary is also grossly involved, as in this boy, nevertheless the gonads supply the primary cause in this double endocrine delinquency. This is borne out by clinical states—where the gonads remain intact and where the pituitary was distinctly involved almost congenitally. Such is the case of the tall boy who showed pituitary tropism in the pregonadal period of life. Headache is the chief complaint with them, and eye defect secondarily. The majority are cases which run their course and the patients show an increased predisposition to tire out easily. This feature at times is amenable to proper adrenal therapy, as energy is an adrenal quality, and I believe also that the fatigue in these cases is a demonstration of the interplay between the pituitary and the adrenal apparatus. Of course, in all these clinical states the other endocrines do not escape unscathed.

As these are useful points in the endocrine study of the teeth, particularly when the tropism of the patient is being determined, I will give you next the design which fits the pituitotrop, the adrenotrop, and the thyrotrop. You will find in the pituitotrop the two upper middle incisors large, square, and frequently spaced. At other times again, in the pituitropic microcephalie, these teeth will override. The teeth of the adrenotrop are characterized by a distinct yellow tinge, and the canines are particularly long and pointed. Their length gives you an insight into the psyche of these subjects, which is very assertive and combative and is, as a rule, present in the scrapper—whether in commercial life, in the professions, or the fighting arena. The vigorous male or the masculine woman show these sharp canines. The latter usually demonstrated such findings at the expense of their femininity. The thyroidal teeth are more transparent than the other types, and have a bluish tinge which the dentists are accustomed to find in certain patients. I do not bring up these facts without expecting you to derive benefit from the exposition. I suppose all dentists make use of the phenomenon of cataphoresis, and a very good friend of mine tells me he had quite an unexpected success in treating pyorrhea in thyrotropic and pituitropic teeth by using small doses of thyroid or pituitary extract and applying the drug by means of the cataphore. I have not mentioned the use of suprarenal extract, and for this there is a very valid reason. Adrenotropic teeth do not, as a rule, appear in constitutions which are subject to pyorrheic conditions, and they are the teeth one finds still intact at seventy or even eighty.

8 West Eighty-sixth Street.

Causation of Appendicitis.—A. Rendle Short (*British Journal of Surgery,* October, 1920) states that:

1. Appendicitis was present, but was relatively rare, in this and other countries until the end of the nineteenth century. Since then it has become very common in most highly civilized countries.
2. The rise, in Bristol and probably throughout England, was beginning in 1895, and was pronounced between 1895 and 1905, since when it has been fairly stationary.
3. The rise was more marked, at first, in towns, in the male sex.
4. Inmates of institutions on a somewhat plain diet are relatively immune.
5. The privations of the war did not reduce it.
6. Soldiers were not unduly affected; possibly they were slightly less liable.
7. In spite of gaps in our evidence, it is clear that the national distribution is very unequal. In the United States, Great Britain, probably France and Germany, Holland, and Helsingfors the incidence is high. In Denmark and Sweden it is lower. In Spain, Greece, Italy, and the rural parts of Rumania it is low.
8. In Asiatics, Africans, and Polynesians it is very rare, unless they take to European food; then it becomes common.
9. In wild animals it is rare or absent. In animals in captivity it is common; this specially applies to apes.
10. There has been a real increase in the frequency of appendicitis in Great Britain and other civilized countries, especially during the period 1895 to 1905.
11. Neither increased meat eating nor any other addition to the food supply seems to account for all the facts.

The Biological or More Inclusive Sense of Therapy

By JOHN J. McNULTY, M. D.,
New York.

The whole is greater than its parts.

The more we understand the human organism, as a phenomenon, the more qualified we become to aid it in its embarrassments; but understanding is necessary if we are to aid rather than injure, as we certainly have been doing in much of our therapy. We are commencing to catch glimpses, at least, of the functioning of the human organism as a biological whole. Much of past, and much of present day therapy is considering physical man in detachment—detached structure, and detached function. The ignorant surgeon removes the ovaries because he is ignorant of the biological dependence of the whole upon the part, and the parts upon the whole. The same is true of the little man with little knowledge —the dangerous man who removes entirely an endocrine or ductless gland in the essential wholeness of interdependence—the endocrine cycle.

"The metabolism is greatly affected by what is known as the internal secretions. The action of the secretions (internal secretions) we are considering form part of this interworking system, and the keynote of this action is their interdependence on one another."—Flack and Hill.

Only the therapist who has some understanding of this now partly revealed interdependence is qualified to practise medicine—to assume, in society, the rôle of serviceable therapist.

"The professional physicists and chemists have hitherto kept away from the serious study of life. For the most part, they have regarded life as something apart, or as a complex physical and chemical phenomenon, which is not likely to throw any light on the deeper problems of physics and chemistry."—Haldane.

It seems that much of our failure to successfully aid in the restoration to the normal is largely due to our lack of biological concept of the organism—not seeing the whole—its interrelated and interdependent functionings. We must sense, to some degree, the capacity of adjustment of the organism we approach in the rôle of therapist—know how the organism tends naturally toward adjustment—restoration to the normal. This capacity of adjustment—this inherent trend toward the normal is the biological movement we must observe, and endeavor to cooperate with. We are ignorant of the composition of what is glibly called a living cell; we are not even aware that such a thing exists.

It comes to us clearly and with force that it is not only a waste of time and energy, but of opportunity, to too intensively define differentials—to spend our time in attempting to differentiate morbid states. The study of differentials in disturbed physiology, to the exclusion of the consideration of the normal, is what has made pathology hang as a pall over the physician and his methods. Pathology, like any other phase of scientific research, it is necessary to pursue if we do not allow it to obsess us and obscure the normal—the normal which is the positive action of the human organism—the human organism biologically considered.

" . . . we may ask four complementary questions in regard to a living creature: 1. What is this, as a whole and in its parts? 2. How does this living mechanism work? This power of persistence, associated with periodic recuperation and rest, is part of the secret of the living organism."

Do not let us waste our time, in vain attempts, trying to fathom the ultimate secret of our living organism. With the understanding now available let us hold, in fixed concept, the normal—the biological normal, and aid, as we can, an embarrassed organism back to the normal.

Present day man seems to be suffering from endocrine weariness—fatigue. Not weariness of one endocrine gland but of all the glands constituting the endocrine cycle, the autonomic mechanism. If this is a fact—a fact affecting man biologically—is it not a logical inference that the administration of vital, associated endocrine substances is good therapy? Is it not now clinically demonstrated that properly associated gland substances are efficacious therapy? Physiological therapy aids Nature's law of repair and normal maintenance, aids as no other therapy has ever aided, and has created a new therapeutic era, an era of therapeutic assurance.

Biological therapy is the consideration of the whole, all the parts as one, all the interrelated and interdependent parts and functions as a biological whole. This sense of therapy has ushered in a new era in which there is no longer justification in stigmatizing our brother patients with fatal terms, such as carcinoma, tuberculosis, or diabetes.

This obsession (ignorance) to differentiate variances or deviations from the normal seem to have taken possession of the medical profession, and our whole vocational energy seems directed toward and wasted upon a quest for the abnormal—the diseased and hopeless. How the differentiations . . . come about is a question which cannot be fully answered in the present state of biology, and this is true in the domain of pathology.

If this perversion of energy would but limit its harmful effect upon the pathologist, it might not be so bad; but when the practising physician is scanning every face and form of patient or stranger in a search for the abnormal, the disordered in function and diseased in tissue, such a practitioner has became a social menace, one whose activities can effect only harm.

"We then begin to realize that the maintenance of normal condition is from the physiological and chemical standpoint a phenomenon before which our wonders can never cease."—Haldane, 1919.

What the modern, the biological therapist desires and endeavors to do is to hold in constant thought the normal and its law of adjustment and maintenance, and to work with the organism in its activities of maintenance, and, when disordered, its law of repair. Awakening society is going to tolerate less and less the practitioner who thinks only and sees only the pathological. Those who are only pathologists have largely contributed to the causes that have driven our patients from us—driven the into the socalled cults, which are kinder and more cheerful in their reception. Mankind, emerging out of darkness into a more wholesome sense of being will no longer passively submit to the dogma and dictum of the pathologist.

The era of the superficial and morbid physician, and the ignorant or unscrupulous surgeon is closing, and a new era is forming and coming to serve intelligently. The more intelligent and serviceable therapy is based on a more correct and adequate understanding of the human organism and its environment, the human organism as a biological whole. The therapy of detachment—the therapy of symptoms and the locally obvious is sneaking back into the darkness of its own ignorance.

Pathology in its relation to total values is not only right but necessary that one may know and hold the normal and its persistence. As Professor Sydney T. Skidmore lucidly states, we must hold clearly and separately phase being from universal being—see disturbed function or diseased tissues only as a phase, a phenomenon of contrast with the normal.

What seems to be modes of action for the expression and maintenance of the normal? Until we see or deduce otherwise, it is. The metabolism is greatly affected by what is known as the internal secretions. With the evolution of the multicellular organism which takes place, a differentiation of organs corresponding to a division of labor, and an interworking of those organs is established. It is hard to say then, what all the functions of any one organ, since an organ is performing these, not only benefits its own life, but aids the functions, growth and nutritrition of the other organs of the body. "The action of the secretions we are considering (internal secretions) forms part of this *interworking system,* and the key note of this action is their interdependence on one another."—Flack and Hill, 1919.

These quotations help to define somewhat that which we now believe to be the activities that activate and maintain the normal. The biological or more inclusive sense of therapy depends upon, for serviceable exercise, the principle of wholeness as contrasted with a sense of detachment, or the treatment of the most obvious. One endocrine gland functioning is not long disordered without disorder of the whole endocrine chain.

The most recent phase of opportunism is the pseudotherapist who passes as endocrinologist in the rôle of differential endocrine diagnostician. As we see these practitioners they appear to us as either conscious or unconscious poseurs. One who has any biological understanding of the human organism knows that the obvious disorder of an endocrine gland is not necessarily the primary or real endocrine disturbance. Exophthalmic goitre is not necessarily a primary thyroid disturbance; Addison's disease is now believed by some to be a gonadal disorder, primarily.

In brief, the obvious is not the whole disorder. This growing belief seems to be justified or confirmed by the reform in metabolism, and the betterment in obvious symptoms that follow the employment of associated gland substances as compared with the effects following monoglandular therapy. We see cretinism improve under the administration of thyroid alone, but we see prompter and fuller—more complete restoration toward the normal when all the endocrines are administered in association, associated in proved proper quantities. By associated gland therapy we mean the association of all gland substances now known to constitute the internal secretions.

No endocrine gland's function can be long disturbed without affecting all the endocrine glands. There is no such condition as one endocrine gland disorder or disease. "Diseases of the ductless glands are usually plural rather than isolated or single. Pluriglandular disease is the rule rather than the exception . . . . . autopsies in cases of ductless gland disorders, pathological changes were observed in more than one of the ductless glands . . . . more recently pluriglandular insufficiencies have become better known, and, in order to profit by certain glandular synergisms, mixed extracts (associated gland substances) have been used with encouraging results."—Carnot. "In all time, something beyond these obvious physical facts has seemed to be needed in order to lift the veil that shrouds the origin."—Ladd. This illuminating statement by Professor Ladd is particularly and peculiarly applicable to endocrine diagnosis and treatment.

The autonomous mechanism, with its resident intelligence, is usually sufficient unto itself; but at times it seems to need intelligent assistance from the physiological therapist. The giving of associated animal gland substances, substances releasing internal secretions and enzyme activities in selective environment, does not disturb natural functioning; but where there appears to be hypo, or hyperaction of the autonomic mechanism, fatigue, endocrine weariness, the giving of associated endocrine substances does aid the inherent law of reestablishment. This is not only good therapy, it is helpful therapy. The right use of therapy has changed the character of prognosis.

Let me again state that endocrine, internal secretions and enzyme therapy is not, by any means, the whole of the physiological therapist's therapy. We wish to emphasize the importance of employing all means, at our command, for the betterment of total nutrition; the use of whole cereals, whole wheat, whole oats, whole barley, whole rice, as the whole of the cereal has the full content of nutrient salts and the now called vitamines. We believe that much of the nutritional disorders now seen is due to the use of modernly milled flours,—milled cereals that have been largely robbed of their nutrient salts and vitamines.

"If there is anything new of importance in the practice of medicine it is this modern work in nutrition. For the continued performance of their physiological functions and for the maintenance of their material integrity, living organisms are dependent on an adequate supply of suitable nutrients . . . . complexity of structure, or the number of parts with specialized functions, and in reference to the degree in which the parts are unified and correlated in the life of the whole."—Mendel. It is the life of the whole that the modern biological therapist holds constantly in thought in his rôle of aider of an embarrassed organism. We are to understand this and cooperate with, not work against, this inherent law of repair and maintenance.

Of the means at the command of the modern therapist one of the most logical and effective is the physiological employment of physiologically associated internal secretions and enzymes. The employment of glandular substances is, however, but part of rational and efficacious therapy of errors of metabolism.

The quantitative factor in associated gland therapy is, from a clinical point, as important as the qualitative factor. As gland substances, internal secretions and enzymes, owe their therapeutic efficaciousness to vitality, concentration and velocity of reaction, they should be associated in small but vital quantities to act as activators, not as stimulants, of the resident reactions. This power of persistence, associated with periodic recuperation and rest, is part of the secret of the living organism. It is with this now, partly revealed secret, that we, as understanding and efficient therapists, would work.

"The aim of all investigation in physiology must be to ascertain the causes of physiological activity."—Haldane.

"The diminution or excess of any of these secretions (internal secretions) will alter the metabolic condition of the body."—Flack and Hill.

Let us have and hold a more inclusive outlook over the domain of therapy; and, as we catch glimpses of the organism's way or mode of repair and maintenance, work with this resident law. While we wonder at Nature's effort for maintenance of normal condition, let us, as biological and more inclusive therapists, cooperate with her in this effort of normal maintenance.

". . . . a contrast of today with yesterday in this progressive domain of physiology."—Mendel.

We desire to ever remain plastic, receptive to new, and fuller, and better revelation in the domain of practical and efficacious therapy, and to this end we work and wait. "Theories are of value because they help us to discover facts."—S. J. Meltzer.

202 West 103d Street.

Retropharyngeal Abscess

An Experience With Sixty Cases

By JOSEPH FRIEDMAN, M. D.,
Brooklyn,
Instructor in Laryngology, Post-Graduate Medical School and Hospital, New York; Associate Attending Otolaryngologist to the Beth Moses, Bikur Cholim, Williamsburgh and Coney Island Hospitals,
and
SAMUEL D. GREENFIELD, M. D.,
Brooklyn,
Assistant Attending Ophthalmologist, Beth Moses Hospital; Assistant Otolaryngologist to the Williamsburgh Hospital; Clinical Assistant, Nose and Throat Department, Manhattan Eye, Ear, Nose, and Throat Hospital.

Retropharyngeal abscess is of comparatively frequent occurrence, and is not nearly so rare as is believed. Its infrequency in many instances is due to the failure on the part of the physician to recognize the condition. Cases have been referred to us for complaints apparently far remote from the pharynx, and in this connection we refer especially to two cases in which the physicians suspected middle ear infections—the children having complained of pain in the ears. The diagnosis is rendered more difficult in children in whom the affection does not develop with an acute onset. In these patients the abscess may form without pain or fever, the pus collecting so slowly that two or three weeks may elapse before alarming symptoms become manifest. In addition, a feature which is not uncommon, the abscess may be atypically located, in that it is so far down in the pharynx that with the ordinary examination it is hidden from view. By merely inspecting the pharynx in these children the general practitioner is likely to overlook the condition unless he employs the finger and directly palpates the postpharyngeal wall.

Retropharyngeal abscess is usually divided into two varieties: 1, the acute or primary form; 2, the chronic or secondary form. The acute type, which is the one usually encountered, is caused by those organisms found lurking in the oropharynx and the nasopharynx, viz., streptococcus, staphylococcus, and pneumococcus. The chronic or secondary type is generally accepted as being due to the tubercle bacillus, and originates primarily in the bodies of the cervical vertebræ. Some of the older writers (1) have classified the acute cases into the socalled internal and external varieties, depending upon where the predominance of swelling is situated. In the former the abscess points into the pharynx, which is by far the more usual direction, while in the latter the abscess is supposed to be directed externally and burrows laterally into the tissues of the neck, and presents marked swelling at the angle of the jaw. This is considered due to a sympathetic involvement of several lymph nodes found beneath the angle of the jaw in front or behind the sternomastoid muscle. In our series of cases we have not encountered a single one in which the external swelling was of sufficient size to warrant such a distinction. In most instances, however, we have noted external glandular enlargement in the cervical chain, but this is a common accompaniment of almost all throat affections. The socalled septic cases that we find described in the literature, several of which have been reported by Bokai, senior, Fleming, and others, are those which occur in connection with the exanthemata, especially scarlet fever, in which case the abscess burrows into the mediastinal tissues or important structures of the neck.

According to Gillette, the disease consists in a suppurative lymphadenitis of the retropharyngeal glands situated on each side of the median line between the postpharyngeal wall and the aponeurosis covering the bodies of the cervical vertebræ. These glands drain the pharynx, postnasal spaces, Eustachian tubes, and middle ears, and hence, in infection of the various structures in these localities, they partake of the infection as do glands in other parts of the body. Hence in simple angina, measles, scarlet fever, diphtheria, or any lesions of the mucous membrane of the mouth or throat, these glands are likely to be drawn into sympathy. As a result we have first an adenitis, then a periadenitis, and finally a breaking down with suppuration and the formation of an abscess. Because of the atrophy and disappearance of the retropharyngeal glands at or about the fifth year, it is said that the process can only occur in younger children. But we cannot agree with those observers who are of this opinion, for in our series of cases we found a retropharyngeal abscess in an adult aged twenty. The condition was preceded by an attack of acute follicular tonsillitis, and ran an acute and fulminating course. It has been asserted that in such a case as this we are dealing with a cellulitis rather than a true retropharyngeal abscess. We cannot understand why such an opinion should prevail, for there is no reason why we cannot have persistent retropharyngeal glands as we have persistence of other structures after a time when, in the majority of cases, these structures are supposed to disappear.

Of the cases we have seen all have been of the acute or primary form. In two instances we suspected a possible Pott's disease, but both children recovered shortly after drainage of the abscess cavity was instituted. The first case was in a child aged twenty-one days. We believe, by the way, that this is the earliest case that has ever been recorded in the literature. The mother of the child at the time of delivery was suffering from well advanced pulmonary tuberculosis with a positive sputum, and a brother of the infant was the subject of tuberculosis of the spine. The child refused to take the breast, was restless, and suddenly became hoarse. We saw the child several days later, and at this time marked dyspnea was present. Upon examination we found a fluctuating mass on the postpharyngeal wall. We incised the abscess and the child made a rapid and complete recovery. The second case occurred in a child aged seventeen months, whose chief complaint was rigidity of the neck and refusal to take food. The illness dated back almost three weeks, during which period the child had been treated for a number of other conditions. At the time of examination the patient held its head rigid to one side and somewhat bent forward. The child wished to be let alone, and any manipulation of the upper trunk greatly distressed it. Inspection of the throat revealed a large rounded swelling on the postpharyngeal wall, more or less centrally located. Palpation disclosed marked fluctuation. We incised the mass and obtained an abundance of foul smelling pus. Exploration of the cavity with the finger showed a roughening on the bodies of the cervical vertebræ. In view of the fact that the child had been ill for so long a period, the fixation of the head, the apparent pain elicited upon manipulation of the upper trunk, and the erosions palpable on the cervical bodies, we were inclined to suspect cervical Pott's disease. The x ray, however, showed no bone changes, and with the child completely recovering shortly after draining the abscess we were forced to discredit our suspicions.

Retropharyngeal abscess in most instances occurs within the first three years of life, as has been pointed out by the older observers, notably Henoch, Burkhardt, Gautier, Koplik, and others, all of whom have recorded large series of cases. Nevertheless, older children and even adults are not exempt from the disease, as we have demonstrated in the case of the adult mentioned above. Of the sixty cases we have observed the occurrence according to age was as follows: One at three weeks, one at two months, four at four months, three at five months, eight at six months, four at seven months, eleven at eight months, four at nine months, three at eleven months, two at thirteen months, one at fourteen months, three at sixteen months, seven at seventeen months, three at twenty months, one at two years, one at three years, one at five years, one at seven years, and one at twenty. In practically every case we were fully convinced that we could trace the source of infection. In the large majority of cases there were diseased tonsils and adenoids. One case occurred in a child during an attack of measles, but we found a concurrent severe purulent rhinitis, the latter probably being the immediate cause of the infection in the retropharyngeal glands. Pinches (2) states that in over fifty per cent. of the cases the source of the infection may be attributed to a purulent rhinitis.

The symptomatology in the average case is fairly characteristic if the physician will only bear in mind its frequency in young children and will employ the proper method of examination in these cases. The clinical manifestations which are most pronounced in this condition are those resulting from obstruction—the mechanical interference occasioned by the pressure of the mass in the pharynx. Furthermore, Symington has pointed out that, although the whole neck is relatively longer in children than in adults, the larynx is fully one vertebra higher in the child; the space, therefore, that concerns us most in retropharyngeal abscess is encroached upon to this extent in infants, giving rise, in the presence of retropharyngeal abscess, to symptoms of pressure on the larynx sooner than would be the case in adults under similar conditions. This can be borne out in the adult who, during his entire illness, never manifested any of the phenomena incidental to laryngeal embarrassment, such as dyspnea or hoarseness.

By reason of the fact that the condition is essentially one of infancy, the patients themselves can give no account of the illness, hence its onset is obscure, and for a history one has to depend primarily upon the parents, who oftentimes are not good observers. For a day or two it more often seems that we are dealing with a simple catarrh or some exanthem. The infant becomes restless and peevish, and soon the mother notices that the child cannot take the breast for any length of time; or, as we have noted in a number of instances, after taking a little milk it is shortly regurgitated through the mouth or nose. If the child is a little older it refuses nourishment or will take only liquids and complain of pain upon deglutition. Gradually the mother notices that the child begins to snore and has difficulty in breathing. The respirations may be loud and stertorous and soon become labored and painful. Hoarseness may then supervene and go on to complete aphonia, and the child cannot cry. It becomes cyanosed, dyspnea increases, which may be associated with epigastric retraction, and the child is apparently very sick. In other cases there may be a more acute onset with high fever. The temperature may vary between 101° and 104°, and the pulse is accordingly increased. The child refuses food, the symptoms of obstruction quickly supervene, and within a short period the child may become deathly ill.

The late symptoms herein described are certainly not to be waited for in order to assure us of a positive diagnosis. It is well to bear in mind the statement made by Schmidt, that, "when in the first year of life an infant ceases to suck well, chokes, coughs, and is restless in sleep, we should always think of a retropharyngeal abscess." Especially is this true if the infant presents any glandular enlargement, particularly if it is confined to one side. A rigid neck in a child calls for a careful and thorough examination of its pharynx. All children who complain of hoarseness or who suffer from the various forms of croup should be given such an examination. Of course, the only positive way of confirming or ruling out a diagnosis of retropharyngeal abscess is by palpation with the finger. In this connection we wish to mention that in a great number of infants not suffering from this condition, if the fauces are examined with the head thrown back, there is seen a distinct prominence to one or the other side, which is caused by an anomalous development of one of the vertebral bodies. Palpation will as a rule obviate such an error. In regard to examination of the throat we wish to emphasize the great importance of proper and adequate light. The examiner should not feel contented until he is assured that he has obtained a satisfactory view of the entire pharynx and has palpated in all directions. Often a satisfactory examination cannot be carried out without the use of a mouth gag, and, although many men advise against its use, we feel that with the proper precaution and care its employment is not attended with any added danger to the patient. In those cases in which the diagnosis is obvious we would advise against any additional and unnecessary examination.

In regard to the diagnosis little more can be said. We wish it to be borne in mind, however, that occasionally the symptoms are not characteristic. They are often very few or they may be so slight as to be entirely overlooked. In this connection we wish to relate the history of a case which to our minds will clearly demonstrate the great error that can occur as a result of inadequate examination with the subsequent failure to recognize the condition. R. B., aged seven, was admitted to the hospital to be operated upon for cervical adenitis. Prior to this operation the surgeon decided it would be a good plan to remove the tonsils and several days later he would excise the enlarged glands. On the regular tonsil service day the child was placed under the anesthetic, and at the time of introduction of the tonsillotome we noted a swelling on the postpharyngeal wall. The mass fluctuated, and we felt we were dealing unmistakably with a retropharyngeal abscess, which most likely was the cause of the cervical adenitis. The child was permitted to come out of the anesthetic, at which time we opened the abscess and obtained pus. It is interesting to note that a week later there was nothing remaining of the cervical adenitis.

The general practitioner, it seems to us, often mistakes retropharyngeal abscess for one of two conditions. He finds a child with fever, who has a little difficulty in swallowing and breathing, and, with a hurried glance into the throat, he makes a diagnosis of acute tonsillitis. In another instance he finds a child who has difficulty in breathing, and he immediately thinks of laryngeal diphtheria. We had occasion to be called by a physician to intubate a child who had been ill for three days and was suffering from marked dyspnea. The child had been given antitoxin, but apparently was not showing any improvement. Upon examination we found a retropharyngeal abscess. We incised the abscess, but did not intubate.

There are certainly no two methods in the treatment of retropharyngeal abscess. Early and adequate incision will insure rapid and complete recovery in most instances. Some men advise against too early incision, but we feel that operative interference is indicated as soon as a positive diagnosis is made. In regard to anesthesia, we believe it is absolutely contraindicated. We have never employed it, and we feel there is no necessity for its use. An anesthetic in a child with an already greatly impaired respiratory channel is certainly fraught with danger. The fear that is commonly expressed concerning complications arising from aspiration of the pus has been overestimated. Coakly states that in the majority of cases the abscess can be opened through the mouth with perfect safety. The exact procedure we have used in practically every case has been as follows: The child is tightly wrapped in a sheet and held in the upright position by an assistant, and the head steadied. With good light, a curved bistoury is inserted into the mass and a vertical incision made, special effort being directed to reach the lowermost limit of the abscess cavity. Immediately after incision the child is lowered face downward and the pus permitted to drain out. We advise the reinspection of the pharynx and insertion of the finger to explore the cavity in order to break up any existing pockets. In all our experience we have not lost a single case, and have never had occasion to incise the second time. Some observers assert that it is safer to substitute a pair of forceps for the knife, employing the Hilton method. Meierhoff (3), who reported fifty cases, advocates this method. In our hands the knife has been exceedingly satisfactory.

We wish to advise most strongly against draining these cases through an external incision. There is absolutely no reason why these children should be permitted to go through life with unsightly scars when the surgeon can with proper care and judgment avoid it. Burkhardt has reported three cases treated in this manner, but we fail to see any advantage gained thereby. Even in cases of extreme external swelling the internal method should be employed. That this can be accomplished is exemplified in a case we saw recently, in which there was a most marked swelling and fluctuation palpable externally. If any case ever required external drainage, this certainly did. Nevertheless, we incised through the pharynx, and the child made a complete recovery and was spared any external disfigurement.

In regard to the aftertreatment in these cases, little else can be done. The children are usually quickly relieved after incision. Local cleanliness is essential, and the building up of these children with tonics and nourishing food is in order.

REFERENCES.

1. Koplik, H.: New York Medical Journal, April 4, 1896, p. 440.

2. Pinches, H. T.: *British Medical Journal,* September 28, 1907.

3. Meierhoff, E. L.: *Laryngoscope,* 1905, No. 6, p. 467.

691 Lafayette Avenue.

Who Is Responsible for the Sponge Count?

By J. W. KENNEDY, M. D., F. A. C. S.,
Philadelphia.
From the Clinic of the Joseph Price Hospital.

The surgeon is the autocrat of the operating room, he rules all or he rules not at all. Divided responsibilities encourage neglect. If there is a single instant in professional or commercial life where responsibility must ever stand four square it is during major surgical operations; and particularly in the case of abdominal surgery, on account of the possibility of inclosing a sponge, a gauze towel or an instrument in the abdomen. Statistics will ever be far from accurate in registering the death rate from such calamities; death occurs probably in ten cases where one is ever known. From personal experience I am in a position to make such a statement, as it is a rule sacred to the Joseph Price Hospital that surgical tragedy must be met with the dignity of silence. One cannot help seeing that the very reason that all such errors must be kept secret in many ways predisposes to more errors. One of my associates, who removed a gauze towel which had been left in the abdomen, consulted me in regard to informing personally the operator, who was a prominent teacher, about his error in order that he might fortify against such calamity in the future. My associate was right. He was attempting to teach, but somehow I could not give my consent to such a report to the guilty one, the conviction seemed to me too persecuting.

I have never experienced such a surgical humiliation, but everything is possible, and we all are at times called to do work in strange surroundings and under the most trying circumstances, so let us not condemn but prevent. Prophylaxis is strongly recommended here. I think it is safe to say that at least ninety-nine per cent. of such accidents come from lack of system or from faulty system, both human errors.

Who is responsible for the sponge count? From the doorknob in, everything pertaining to the operation comes directly under the supervision of the operator and he is responsible for all. I believe the courts hold this to be the case, but the action of the courts would not in any way modify my view regarding the responsibility for everything pertaining to the operation. There is no teaching within my knowledge which is so reprehensible, so void of all that is manly, so negative of sacred duty, so impotent in strong teaching principles, as to hold a nurse or surgical associate responsible for the sponge count.

For a teacher to say in the presence of a group of medical students or young physicians aspiring to be surgeons, that a certain nurse says the sponge count is correct, is to me incompatible with all that is strong from the viewpoint of teaching. Will the two hundred students who hear their teacher call for the sponge count from a particular nurse have such a nurse when they go forth to do their life's work? Can you produce competency without penalty of operative responsibility? I think not. Regardless of whether or not these young men have a competent sponge nurse, you have taken from operative responsibility its keenest whip when you divide or place such sacred responsibility upon another. I say you must not do this, I have too often seen its tragedy. Let us be men, give but not ask for mercy. I want to be held responsible for my work.

I only ask for the leniency which may be due me after exercising to the best of my ability the facilities which surround me, but never shall I divide the responsibilities, errors, or calamities of my surgery. The husband or the father of the patient does not ask you before you operate upon a member of his family, who is your sponge nurse, who is your anesthetist, or your assistant; he holds you responsible for all. The solution of this much talked of subject is so simple that, like the simple solution of most grave questions, it was found only after much research through complicated methods which have been abandoned. The detailing of some special nurse to take care of the sponge count even in the large clinics is an unnecessary extravagance and poor teaching. To see a nurse grovelling about on the floor counting sponges is certainly an unsurgical sight. The exhibition of a certain number of hooks upon which the sponges are to be hung in order to check the operator is not stable, as the hooks did not count the sponges to begin with. How do the dozen hooks know the operator began with a dozen sponges? Why not thirteen? Did the operator count them? Did the operator count the forty sponges the sponge nurse was supposed to begin with? Did he count the twenty-one sponges on the floor and the nineteen unused ones? No, he did not nor did he pay any attention to such number; he took the nurse's word for it. Even should he count the sponges himself, could he count forty sponges a thousand times and not make a mistake? The solution of this question is simple and easy of accomplishment. The operator must inspect his sponges before and after each and every operation and the only way this can be quickly and accurately done, is to have a definite small number of sponges and gauze towels; it is simply a question of inspection.

In the Joseph Price Hospital we work with three small sponges and three gauze towels, never more and never less. The sponges are placed in one basin and the gauze towels in another and held before the operator before he begins, in order that he may inspect them, and they are held by the nurse until the operator says, correct.

After each operation the same inspection is gone through with. The number of sponges and gauze towels is so small that it is impossible for him to make a mistake in count, a mere glance at three is sufficient for accurate count; not so for forty. As a matter of discipline the nurse counts these sponges and towels twice before submitting the same to me for inspection and my assistant checks me, but I hold neither responsible. There is no operation I know of in abdominal surgery which will require more than our number of sponges and towels. You can use any number of small gauze pieces for sponging blood as long as they are never placed in the abdominal cavity to remain a single second. The peace of mind I have from this simple system of inspection gives me more comfort and strength of assurance than any other technical step in my work. There is nothing so strong and manageable as simplicity and there is nothing in surgery so strong as confidence in one's self to master every detail of the operation. If any particular detail of technic is not under the surgeon's inspection, why any other step? If a nurse must be held for sponge count, certainly another must be held for count of instruments. But this is all too frail to even admit of argument.

241 North Eighteenth Street.

The Educational Campaign Against Tuberculosis in Pennsylvania

By A. M. DEWEES,
Philadelphia.

Established about thirty years ago, the Pennsylvania Tuberculosis Society was the first organization formed in this country for the purpose of arousing popular interest in the fight against tuberculosis and of promoting activities for the control and prevention of the disease. The group of men who organized the society were true pioneers. We know that thirty years ago the fundamental facts regarding the cause and development of tuberculosis had just come to light. The Pennsylvania society, therefore, undertook to cultivate absolutely unbroken ground when it took up the task of bringing the known facts to the knowledge of the general public. Probably there was little thought at the outset of developing such an organized tuberculosis prevention campaign as operates today, not only throughout Pennsylvania but in every state in the Union.

During the early years of its history the society worked in a quiet but persistent way. Papers on various phases of the tuberculosis problem were prepared, read and published. From time to time literature was issued for popular distribution. Opportunities were sought for presenting the subject to medical meetings and on other occasions. Efforts were made to arouse health authorities to a sense of their responsibilities in the matter of tuberculosis. The Pennsylvania society, or men connected with it, were largely responsible for the fact that this state was among the very first to provide a tuberculosis division in its Department of Health, and to establish a system of clinics and sanatoria, the latter far surpassing anything of the kind for an equal territory and population, in the world. At various times the society has issued a regular publication for longer or shorter periods. It hardly comes within the scope of this paper, but I may at least mention the fact that Pennsylvania society men took a very important part in organizing and carrying through the International Tuberculosis Conference held in Washington, and shortly after that great event helped to organize the National Tuberculosis Association.

Without making any attempt during many years of its history to develop an organization throughout Pennsylvania, the society nevertheless gradually exerted an influence for tuberculosis prevention in many sections of the state. Funds used came entirely from voluntary contributions, and until very recent years the money available was extremely limited. A vast amount of selfsacrificing volunteer effort was put into the activities of the society by men on its board of directors.

At least fifteen years ago the activities of the society began to bear fruit in the formation of local tuberculosis organizations in different sections of the state. In most instances these local organizations had for their object mainly the relief aspect of the tuberculosis problem. About the same time sanatoria were established at several points. While much of this early activity was of a relief nature, it at the same time served to arouse interest in the problem of tuberculosis. In practically every instance where a local organization was formed originally for relief purposes there has been developed a much broader and comprehensive program, and the organizations are stronger and far more active than at any time in their history.

It was not until 1908 that the Pennsylvania society began to make itself known throughout the state. In that year the Christmas seal sale was first used as a method of raising funds for tuberculosis prevention work under the direction of the National Association. The sale of the little stamps, which have now become known all over this country, has proved a marvelous plan for raising money and spreading the propaganda against tuberculosis.

During the years since 1908 the Pennsylvania society has gradually developed at least something of an affiliated local organization in every county in the state excepting two. There are at present about a hundred of these local organizations. Many of them are strong countywide tuberculosis societies, with full time paid secretaries, doing their work on a budget basis and in a businesslike way. In many places the local organization is still a committee of a woman's club. It may be said in passing that too much credit cannot be given the women's organizations of the state for the generous interest and hard work they have put into the fight against tuberculosis. As a matter of fact, a large part of such organization as we now have throughout the state was started by and has been developed from committees of women's organizations. Our policy regarding local organizations, however, is to make them thoroughly representative of the community, with both men and women in membership and, so far as possible, countywide. We endeavor to make it invariable that at least one physician shall be in the organization, and to make sure of close cooperation with health officials by having them in the organization membership or by frequent conference with them on program activities.

Some idea of the magnitude of the nonofficial health organization the Pennsylvania society has built up in our state, and of the hold the effort to stamp out tuberculosis has taken upon the people of the state, may be gotten from the amount of money raised in the last two Christmas seal sales. In 1917 the funds in our state totaled about $95,000. There was no seal sale in 1918, when it was omitted at the request of the American Red Cross. But for that year's work throughout the country the Red Cross appropriated $2,500,000. Last year there was more thorough and intensive organization and publicity for the Christmas seal sale than ever before. The amount raised in this state, exclusive of Pittsburgh and Allegheny County, was nearly $300,000. Under the plan we follow approximately eighty per cent. of the amount raised by each local organization remains in the hands of that organization for expenditure in its territory. The remaining twenty per cent. is divided between the Pennsylvania society and the National association.

Turning to the side of definite activities for the prevention of tuberculosis, it may be said that the Pennsylvania society confines its efforts very largely to a program of education and propaganda. We have endeavored to keep in line with the program for the country outlined by the National association, while at the same time taking into account conditions and needs in our own state. We have not found it necessary to engage in clinic work because the state itself has maintained clinics in every county. But we have endeavored to assist the state in making these clinics serve their respective communities by helping to get cases to them for examination. Several other lines of activity have been included in the statewide program and in the program of most local organizations. These activities include efforts to make effective the medical examination of school children; periodical medical examination of industrial workers; education of the rural population through the granges; promotion of open air schools; introduction of the modern health crusade in public and parochial schools as a means of training the children in health habits; tuberculosis exhibits at county fairs and on other occasions; talks at teachers' institutes and before medical societies, clubs and other organizations; publicity through the newspapers; tuberculosis days in the schools and churches, including talks by teachers and clergymen, using material sent out by us; antispitting propaganda, and fly campaigns. Locally the tuberculosis organizations of the state have engaged in a great variety of activities, the character and amount of work being done being determined largely by the strength and interest of the organization and the funds available. Exhibits have been shown, assistance given in maintaining health centres, tuberculosis clinics, community nurses and local sanatoria; health demonstrators such as the health clown and fairy have been employed, and in two instances organizations developed their own health clowns; surveys have been made; in one county a dietitian is employed; nursing service for following up the school medical examination is provided in a number of places. Just now much attention is being given by tuberculosis organizations in a number of counties to the need for hospital accommodation for advanced cases of tuberculosis.

In all that is done the Pennsylvania society as the state organization endeavors to keep before the local organizations the importance of such fundamental factors in a tuberculosis program as finding cases, early examination, placing advanced cases under hospital care, care of contacts, training of children in health habits and proper care of those below par physically, provision by public authorities of clinics, sanatoria, open air schools and nurses, and general education on tuberculosis prevention.

Fractures

By H. B. PRITCHARD, M. D.,
Syracuse, N. Y.

The title of this paper is comprehensive enough so that only the high spots will be touched upon. Many books have been written and many papers published, and yet it remains a subject of intense interest. It was with the one idea of finding, if possible, where we stand in the treatment of fractures, as compared with the period before the war, that this paper is written. I have used as a basis for the presentation of this subject two groups of material. One is a series of fractures which were treated at the Hospital of the Good Shepherd during 1915 and 1916, under the First Surgical Service, and the other is a series of cases which have been referred to me over a period of five years or more, most of them being end result cases as regards the question of union.

The most valuable data relative to fractures is to be found in a comparison of end results, taking into consideration the anatomical, the functional and the economic conditions. Unfortunately, the end results of the series mentioned above do not rate the cases except as improved, unimproved, cured or dead, and for that reason I am not going to burden you with statistics, because I realize that without properly classifying the end results at the time of discharge from the hospital and being unable to follow up the cases the statistics are worthless. In parentheses, let me make a plea here for hospital standardization under the American College of Surgeons schedule, the classifying of end results as relates to the anatomical, the functional and the economic condition, and the adoption of a follow-up system.

Regarding the cases treated at the hospital, it was at a period when we were seeing the decline of the Lane plate, the ascendency of the autogenous bone graft, the diminished use of extension with an increased use of plaster of paris casts and splints. The majority of the cases were treated with plaster casts and splints. In one case of nonunion of the humerus I placed an autogenous bone graft, placing the arm in a body and arm cast. An infection developed in the patient which was not recognized as early as it should have been because of its being encased in the cast, and, as a result of the pressure caused by the locked up pus, a musculospiral paralysis developed. Good union occurred in the fracture. At a later time I freed the nerve from the scar tissue and wrapped it in fascia, but with no improvement of the paralysis. In another case of fracture of the femur a bone graft was done because of the spiral fracture and our being unable to hold it in position. This fracture healed without sequelæ.

Considering the latter series of cases I mentioned, which are virtually end result cases, one can readily see that the study of these cases is taken up from a different angle. A fracture, treated in private practice or in the hospital, is only likely to be of interest up to the point where union has taken place. A Colles's fracture means a period of about three weeks, and a fracture of the bones of the lower leg about six weeks. You can readily see that this means a consideration of the anatomical results only. We speak of the healing with or without deformity, and again the only consideration is the anatomical result. It is only when we begin to deal with cases after the union of the fracture has taken place that we realize the functional and economic result. As an illustration, we will cite two cases of Colles's fracture with good union and apparently good position; Volkmann's contracture was present. Anatomically, there was a good result, but functionally and economically a bad result. You see how three weeks for a Colles's fracture extends itself to three months, three years, or even for life. Another case of Pott's fracture resulted in good union, some spreading of the ankle joint, limited flexion and extension of the ankle, and contracture of the dorsal tendons of the toes. Nonunion is one of the less common conditions under present methods of treatment, and from my observation of these cases it would seem that there is a tendency to overtreat our fractures and actually increase the number of sequelæ. At least fifty per cent. of Volkmann's contractures are due to tight bandaging, and yet nonunion is a rarity in fractures of the forearm. Therefore it would not seem to be rash advice to at least bandage lightly and even frequently remove the bandages. Another element to be considered in fractures is that of the joints in the neighborhood. It is claimed that immobilizing a joint will produce no adhesions unless some injury is present in the joint. Whether or not that is so I do not know. I do not think it is material because it is likely, in most fractures which occur near a joint, that the joint has sustained and transmitted the force and is injured to a greater or less extent in a large number of cases. With that idea in mind, and knowing that nonunion is not the bugbear that it was in the earlier days of treatment of fractures, it would seem to me advisable to use such devices for treatment which are easily removable and to use massage and early passive motions of the joints.

For the purpose of this paper I have divided the treatment of fractures into three stages: the prewar, the war, and the postwar. We all realize that the treatment of fractures antedates the surgical treatment of most conditions of the body, and it is easy to understand for that reason that the names of many of our illustrious men are attached to certain types of fractures because of their exact description of those fractures, and we find the names of other men attached to methods of treatment because of the ingenuity they showed. In the prewar stage we had gone through the gamut of splints, extension apparatus, wieldy and unwieldy, the development of the open operation with the use of absorbable and nonabsorbable materials, the increased use of the plaster of Paris casts, the autogenous bone grafts and the improved technic of extension by the use of a nail through a bone or a pair of calipers. For the treatment of compound fractures we had passed through an era of debridement first advocated by Volkmann, and reached an era of conservatism. Coming into the war period we brought with us the experiences of many years of handling fractures and many different methods. At first thought the treatment would be the same as before, or, if it were changed, it would mean that the former treatment was not good. It is because this statement is not necessarily true that I am going into details. Fractures of the world war were peculiarly different from those of civil life. First, they were mostly compound fractures. Secondly, they were almost one hundred per cent. infected wounds, because they were caused by a puncture inward instead of outward, as is the case in most compound fractures in civil life. Thirdly, it was necessary to transport the patient, and often through several different journeys and over a considerable period of time. It is easy to see the usefulness of the Thomas splint when you take those facts into account, as it was easy to apply even over the shoes and clothing. Few sizes had to be carried in supply. They were simple in construction, for they consisted of one piece only, so that nothing could be lost, and, finally, they made for comfort during transportation. If in civil practice you can find any of these factors it argues for the Thomas splint. The Balkan frame and the Hodgkin's splint can in the same way be explained. Remember, during the war we were dealing with nearly a hundred per cent. compound fractures, and add to that the fact that practically all were infected wounds: first, because the puncture was from without, carrying in infected material, and, second, there was a necessary delay in treatment because of the time taken to transport the patient from the firing line back to where a hospital could exist with safety. Then we come to the extensive debridement of which so much has been written. Again we must take into consideration that every case was a veritable culture pabulum when it reached the surgeon, on account of the large amount of bruised and dead tissue. No comment is needed as to the reason for so little use of autogenous bonegrafts in these cases, especially when we realize what disastrous effects even a small amount of infection can cause to the grafts.

Having the prewar and the war experience to guide us, what should our treatment of fractures be in this postwar period? First, I should lay great emphasis on the importance of extension. It seems to me that the older surgeons realized it and put it in practice. It then fell into some disrepute, and the treatment during the war reemphasized the value of it. As to plaster casts and moulded splints, I believe that they are good in many ways, and where muscle pull does not have to be overcome by extension I do not think they can be bettered. For ease to the patient and for treatment of unusual fractures, I believe the Balkan frame and Hodgkin splint fill a long felt want. In compound fractures I believe debridement will fall into disuse again, for the reasons I have mentioned. It is a treatment which is justifiable where the conditions demand it, but that is not often the case in civil injuries.

That leaves for our consideration the open operation. I think one can definitely state that open operation is only justifiable where union and good position cannot be obtained without it. The greatest enemy to open operation is infection, and that apparently will keep it from becoming a popular operation for a long time. Added to that, functional and economic results are of far more importance to the patient and the world than the anatomical results, and those seeing fractures in all of their stages are free to say that it is not essential to have a perfect anatomical result to obtain the other two requirements.

CONCLUSIONS.

A study of fractures should be based on end results as regards the anatomical, the functional and the economic conditions. A study made on that basis will break one away from the time honored teaching of the disability caused by fracture as measured by the period of time necessary for union The aftertreatment of fractures has a demand upon the surgeon as has the uniting of the broken ends, and it is a large item in the treatment of fractures The open operation is seldom justifiable, and will probably be used less rather than more as time goes on. This is because of the ease with which infection gains entrance in an open operation fracture and the difficulty with which it is prevented. Because war surgery developed some new methods of treating fractures and reestablished some older discarded methods is not of itself sufficient reason for continuing their use. The difference between war and civil fractures must be considered, and as a result of that the best treatment can be devised for each. Nonunion occurs in these days because of some inherent condition in the individual or of the fracture, and not because of insufficient splinting. For this reason I would make the plea that more frequent inspections of the limb be made, and that early massage and passive movements be started.

Cholesterin Deposits in the Breast.—Stewart and Forsyth (*British Journal of Surgery*, July, 1920) concludes as follows:

1. The cases described are instances of long standing subacute mastitis, where, owing to retention of necrotic débris, inflammatory exudate, glandular secretion, and effused blood over long periods, extensive deposition of crystalline cholesterin has taken place.

2. The histological appearances in paraffin sections are most striking and characteristic, consisting of an enormous number of clefts, lying parallel to one another in large groups, or arranged in a pennate fashion. The crystals occupying these clefts have the optical and microchemical characteristics of cholesterin. The intervening stroma contains foreign body giant cells in large numbers, and many foamy endothelial cells, especially around the periphery of the main deposits. The foamy cell areas contain in addition a large amount of acicular crystalline material which melts at temperatures well below 100° C., and which forms anisotropic globules on cooling (i. e., compounds or combinations of cholesterin and fatty acids).

Editorial Articles

OCCUPATIONAL DISEASE

History, one of the most illuminating of studies, is, at the same time, a most discouraging one to those who would have the world move beyond the pace of a snail. Industrial hygiene seems so new a field of investigation and practical application of the laws of health that, on superficial view, one cannot but feel that poison, dust, poor ventilation, and other conditions to which the worker is exposed and by which he is all too evidently injured, have been but recently discovered and will, therefore, be promptly abolished. Unfortunately such is not the case.

One has but to turn to the pages of Ramazini of Padua, written over two hundred years ago, to find that, at that far off time, it was well known that the worker in stone dust was doomed to lung disease, that laborers in lead frequently met an untimely decline and end through the effects of this subtle poison, that prolonged exposure to high temperature resulted in physical deterioration or in disorders due to succeeding chill. And yet, in the twentieth century, we are still investigating to discover the effects of axe grinding, or whether workers in lead have a lead line and drop wrist, or whether conditions which interfere with heat elimination by the body actually have the effects which anyone who knows our small stock of physiology knows they must have.

We have gone so far (or are we really there yet?) as to report, officially, cases of disease to authorities who usually do nothing about them when they are reported. This is much like locking the stable after the disappearance of its contents except that we know beforehand, in this case, that the horse will probably be stolen. Such doings, or not doings, will go on, despite our knowledge, for centuries unless we can come to an appreciation of the value of the human machine in industry, to consider the employee as not only the most valuable machine in industry but as a human being.

Millions that go for public monuments to the accumulator of money might better go toward improving working conditions and searching (researching we should, of course, say) for newer and safer methods to replace old and dangerous ones. Such expenditure would pay large dividends in the long run. Alas, as Arlidge wrote, nearly a century ago, "Care is seldom taken that the animal machine sustain as little injury as possible, and that it will bear the work imposed. . . Enough if the man, the woman, or the child be at work the requisite time, and perform what is required. Man after man dies in the prime of life" and there is still "a strange apathy both among the men and among the masters." Verily, as Ramazini remarked, "Tis a sordid profit that's accompany'd with the destruction of health."

COLD AND RESPIRATORY DISEASE

There has been so much effort of late to connect respiratory diseases, including socalled colds, with bacterial invasion rather than with the conditions leading to bacterial invasion and, in particular, with the condition of low temperature, that any study which supports common, and age long, experience in the matter, is valuable.

Louis Besson has compiled the mortality returns in Paris from bronchitis, lobar and bronchial pneumonia, socalled congestion of the lungs and other respiratory affections except phthisis, by weeks, covering a period of ten years, from 1904 to 1913, and compared these with the meteorological conditions, especially of temperature and wind direction. He finds the minimum deaths from these diseases in the first week of September and the maximum in the second week of February with a secondary rise near the middle of April. The number of deaths corresponds closely with the temperature, the effect of the latter being increased especially by winds from the northeast. As might be expected, the highest death rate lags three weeks behind the lowest temperature and most marked influence of air movement. At 20°C the deaths were eighty-four, at 10° C. a hundred and forty-two, while at 0° they were two hundred and thirty. At 20° a fire would hardly be needed, but at both 10° and 0° it would undoubtedly be started, and yet the increase in deaths from 20° to 10° and from 10° to 0° is practically the same.

That closed windows, superheating, increased contact, and other factors have their influence in the spread and in the fatality of respiratory affections is not to be questioned, but back of all this is the danger from the depressing influence of cold, and the double danger from cold plus heat extracting winds. The best prophylaxis against such affections still lies in a reasonable use of clothing, fuel, protection from chilling drafts, avoidance of fatigue, and a temperance in meats (and possibly drinks) which allows of unlimited circulation of the blood. We need to have an old fashioned respect for cold and to fight against it accordingly.

INFANT WELFARE

The war has impressed upon the minds of those who think, the great value of healthy children. This is the case in Europe especially where the flower of manhood has been cut down, maimed and disabled. The rising generation must, as far as possible, replenish this good stock and in order to bring about this object must be reared properly. It is not enough that a large proportion of infants born should live, but it is essential for the benefit of the race and the nation that they should grow up to a vigorous manhood and womanhood. So far as infant welfare is concerned more progress has been made in Europe that in this country, probably because the necessities were greater. However, in the large cities of this country and in New York, in particular, there is plenty of scope for work of this nature, and, in fact, in New York a considerable amount of progress has been made in this direction, notably by the Department of Health.

In Europe, infant welfare work has not been carried on for such a length of time that results can be fairly well estimated. Provisional figures have been published recently by the Registrar General of England and Wales which shed a gleam of light through the sombre clouds which tend to obscure the national horizon. The figures referred to show that the birthrate is the highest during the past ten years and that the deathrate and infant mortality rate is the lowest ever recorded. The fall in the deathrate was, of course, not unexpected and it would have been a sad commentary on the advance of medical science and hygiene and what may be termed infant welfare service, had not infant mortality materially decreased. The general deathrate of England and Wales exhibits marvelous improvement and demonstrates how much can be accomplished by the judicious application of hygienic and sanitary laws. The general deathrate now stands at the low figure of 12.4 to the 1,000 of the population, while the decrease in infant mortality is even more encouraging, being eighty to the 1,000 births, compared with ninety-seven in 1916, and one hundred and twenty-eight from 1901 to 1910, and one-hundred and fifty-three from 1891 to 1900.

This is one of the few happy consequences of the war and is largely due to the unselfish and unremitting labors of a band of ladies who gave their services with the aim of assisting their less fortunately placed sisters to rear their children with a view of escaping the many and various dangers which beset the infant during the first year of life. Perhaps the birthrate figures are yet more a matter for congratulation. In England and Wales it is twenty-five and four tenths per 1,000 of the total population; in London twenty-six and three tenths; in a hundred of the large towns, including London, twenty-six and two tenths, and in 150 smaller towns, twenty-four and nine tenths. As said before these are the highest birthrate figures for a decade. This rising birthrate and rapidly falling infant mortality rate, at any rate, are encouraging signs, and go far to refute the widely expressed opinions that European races, among which Great Britain is numbered, are drifting slowly but surely into degeneracy.

It is doubtless that those termed the best stocks have fewer children than formerly, yet, on the other hand, the quality of the general mass is rising fast. These highly favorable vital statistics are largely owing to efficient infant welfare work and point a moral to all countries in which such service is lacking or inadequate. In this country, although there may not be, indeed is not, the need for work of this description as in Europe, at the same time, conditions in some of the big cities are extremely inimical to a low infant mortality rate, and what is quite as important, to the healthy upbringing of children. There is no city of the world that holds within its borders a more heterogeneous population than New York, nor one in which slums are more prevalent nor overcrowding more in evidence. Poverty striken people from eastern Europe have flocked to this mecca of the Western world and despite the magnificent efforts of perhaps the most efficient health department of the world, have to a large extent duplicated their habits on this side of the Atlantic. Teaching ignorant mothers how to bring up their infants properly is really, after all, a question of self defense. A population living under unhygienic conditions is a menace to all, and to encourage an infant welfare campaign is an economical measure. It will yield splendid returns from every point of view.

PHYSICIAN AUTHORS: DR. CHARLES HENRY LERRIGO

Although he is Registrar of Vital Statistics for the State of Kansas, Executive Secretary of the Kansas Public Health Association and Executive Secretary of the Kansas State Tuberculosis Association, Dr. Charles Henry Lerrigo, of Topeka, occasionally finds odd moments—generally of an evening—to devote to writing. Some of this writing is strictly medical, and appears from time to time in the medical press. Some of it consists of articles on popular medicine, for the laity. This material appears in various magazines, weeklies and dailies of general circulation, particularly those of the farm press. Dr. Lerrigo holds a regular staff appointment as Medical Advisor for the Capper Farm Press, owned by Senator Arthur Capper of Kansas and reaching hundreds of thousands of subscribers in the wheat and corn belt. But that is not all. Dr. Lerrigo has, as he says, a hobby for writing fiction for boys and grownups. Within the last three years two of his books have been published in the Boy Scout Life Series by a New York publishing house. This is a series which gets the official sanction of the headquarters' officers of the Boy Scouts of America, and we may take their word for it that Dr. Lerrigo's stories, *The Boy Scout Treasure Hunters,* (1917) and *Boy Scouts to The Rescue,* (1919) are just the sort of stuff that wholesome, clean minded, healthy lads, trained in the best of Boy Scout traditions, like best to read. As their titles indicate, these stories are not lacking in excitement, but it is excitement on a much higher level than that which boys used to get in the penny dreadfuls. They are the sort of books that are sending *Old Sleuth* and *Diamond Dick* and all the rest of the lurid, machine made school of blood and braggadocio into oblivion.

Lerrigo's fiction for grownups has a decided medical flavor. There are two volumes, *Doc Williams,* published in 1913, and *The Castle of Cheer,* which appeared three years later. Old Doc Williams, a well-meaning, shrewd old man, honest in his quackery but a quack nevertheless, figures in both volumes, as do several other characters. Doc Williams's adopted son David is educated to be a "real doctor, equal to the best." The story in the first volume centers on the tragedy of the young man, torn between loyalty to the old quack and his own better judgment and honesty. In the end the old doctor abandons his "marvelous healing oil," with which he has really accomplished a great deal of good. There is, of course, a girl in the story, so that it is spiced with romance. But the chief figure of interest is old Doc Williams, an optimist and homely philosopher who is much the same type as David Harum.

Both of Dr. Lerrigo's novels have had a large sale in this country and England. There was even an order for a thousand copies of *Doc Williams* from Australia. The book is to be reprinted this year in a popular priced edition. Members of the medical profession have been particularly enthusiastic about Dr. Lerrigo's books. Speaking of *The Castle of Cheer,* Dr. E. R. Baldwin, president of the National Association for the Study and Prevention of Tuberculosis, says: "It is a book of real cheer, of sympathetic, genuine knowledge of actual life in good sanatoria; also an actual portrayal of the methods used by charlatans. Honest physicians will receive great encouragement and their patients valuable instruction from this tender story, containing as well a strong picture of the dire results of quackery. The author exhibits an understanding of the tuberculosis problem, refreshing to those who know it, to whom it will be no surprise that the book is dedicated to the late Apostle of Hope, Dr. E. L. Trudeau. It will be a new inspiration toward a humane attitude as to the danger of infection. Every doctor should read it and recommend it to his patients whether directly affected or not."

Dr. Lerrigo has done no regular medical practice since the spring of 1917, when he entered the United States Army in command of Ambulance Co. No. 347, which he recruited himself from the students and alumni of Washburn College, at Topeka. Dr. Lerrigo served in various army camps for a year and was in France a year. Beginning as a First Lieutenant in August 1917, he attained the rank of Major before he was mustered out of the service in May, 1919.

Dr. Lerrigo is a native of England, having been born in Birmingham on September 12, 1872. At the age of fourteen he came to the United States with his parents, who settled in Kansas. Dr. Lerrigo got his medical degree in 1900 at Homoe Medical College, of St. Louis, and immediately began practicing in Topeka. Early in his career as a physician he began making a special study of tuberculosis and is considered an authority of the highest order on that subject. For several years he has been active in fighting the spread of the disease in his home state and has written many pamphlets and leaflets of advice to sufferers which have been distributed by the state and by the tuberculosis association and have done much to stamp out the disease. He was one of the founders of the Kansas State Tuberculosis Association, which through its free clinics and various other means has perhaps done more than any other similar society to instruct the public in the best methods of getting well and keeping well.

Dr. Lerrigo was married on April 16, 1895, to Miss Annabel Barry, of Topeka, and they have four children. Besides being prominent in medical circles in his State, Dr. Lerrigo also takes a prominent part in civic and political affairs.

AGE AND SEX IN PERNICIOUS ANEMIA

It is generally believed that pernicious anemia occurs most frequently during middle age and this belief is fostered and taught in the majority of text books. However, there are some dissentients from this view; R. C. Cabot, for instance, says that "pernicious anemia is a disease of elderly people, its incidence being not far different from that of cancer." Herbert French in Allbutt and Rolleston's *System of Medicine* states that "the great majority of the patients are of the cancer age, that is to say, between thirty and sixty." Dr. John Eason, writing in the *Edinburgh Medical Journal*, December, 1920, as the result of a somewhat wide experience and of the combined observations in Edinburgh hospitals during the past twenty-one years, expresses the opinion that pernicious anemia is a condition which occurs in elderly people. Moreover, Dr. Eason submits that there are three chief defects in all published statistics on the age incidence of pernicious anemia, two of these so flagrant that they are responsible for an entirely erroneous impression regarding, 1, The age incidence, and, 2, Probably regarding the essential nature of pernicious anemia. Many more patients suffering from this disease are admitted to Edinburgh hospitals from the city itself than from extra mural districts and he concludes from this fact that the only reliable basis for calculation is from the cases of pernicious anemia among the local sick. Again the age incidence of pernicious anemia has not hitherto been considered in relation to the age distribution of the population, and lastly the basis of ideal statistics must be pathological as well as clinical evidence.

In an analysis of cases which had been admitted to various Edinburgh hospitals during the past twenty-one years, and of figures published by the Registrar General for Scotland, the following deductions are suggested: 1. The Edinburgh hospital cases show a maximum frequency at ages fifty-five to sixty-nine, while the Scottish death figures show a similar maximum at ages fifty-five to sixty-four and a second maximum at ages seventy to seventy-four. 2. The second maximum in the death figures may or may not be attributable to faulty certification and diagnosis, the term being used as applicable in cases of advanced anemia in elderly people, perhaps without blood examination and perhaps in cases where the cause of anemia, cancer or the like, was not recognized. 3. In both the Edinburgh male cases figures and the Scottish death figures there are well marked maximal frequencies at ages over sixty; in the case figures at ages sixty-five to sixty-nine and in the death figures at sixty to sixty-four and seventy to seventy-four, while the maximal frequencies in the female sex are not so well marked and somewhat younger. In the Scottish death figures there are female maxima at ages fifty-five to fifty-nine and seventy to seventy-four; in the Edinburgh hospital case figures the female maximum is not well marked and there is a plateau between fifty and seventy.

With regard to the age and sex incidence of pernicious anemia Dr. Eason thinks the following conclusions may be drawn: 1. Authorities have almost without exception stated that individuals about the middle age of life were specially prone to develop pernicious anemia. 2. Hypothesis and investigations based on hypothesis may proceed on futile lines if this view of the incidence is wrongly maintained. 3. The evidence from a large general hospital of a medical school probably in all cases misleads unless cases of local sick from pernicious anemia alone are the basis of conclusions. 4. On this basis Edinburgh hospitals show the largest numbers, between the ages of forty-five to fifty-nine. 5. The rate in these hospitals per 100,000 of the population is highest between fifty-five and sixty-nine. 6. The pernicious anemia death rate figures for Scotland correspond very closely with the Edinburgh Hospital case figures. 7. Until the age of fifty the rate of incidence inclines to be higher in the female than in the male. Thereafter the rate is definitely higher in males than in females. 8. It appears that senility is a more important etiological factor than has hitherto been generally recognized. 9. There appears to be an increasing liability to pernicious anemia with advancing years.

Dr. Eason's reasoning in support of his argument that pernicious anemia occurs more frequently in the later period of life is plausible, if not absolutely convincing. At any rate, most individuals, medical and others, will agree with him that statistics are often futile and misleading. Indeed figures can be so arranged as to prove almost anything and although when carefully gathered and set in order very valuable, there are those who will be inclined to agree with the late Professor Black, of Glasgow, that statistics are like sausages, they depend a good deal upon the old woman who made them. However, it does appear to be in the nature of things that pernicious anemia is more prone to affect elderly people than those of middle age.

THE NEW PENOLOGY.

A melancholy confession comes from the Acting Committee of the Pennsylvania Prison Society for the past two years. There have been improvements in medical science, in the care of the insane, and in everything except in the solution of problems arising from crime and pauperism. But it has been learned that the criminal is not merely a person who, in the exercise of an unfettered will, has chosen evil rather than good, but "a person of complex personality shaped by heredity and environment to abnormality, none the less a menace to society, none the less requiring restraint. . . . We have learned from scientific study that from fifty to sixty per cent. of our prisoners are abnormal, feeble-minded, insane, psychopathic to the point of irresponsibility. We have also learned that a large number of those who do not belong to the abnormal are the victims of neglected childhood, of evil influences, often the depraved one of the places falsely called reformatories." Surely, with such normal minded gentlemen tracking down evils with regard to public safety and individual reform, things will soon be heartier for both sides.

◆

News Items.

American Proctologic Society.—The twenty-second annual meeting of the American Proctologic Society will be held in Boston, Mass., June 3, 4 and 6, 1921. The Committee of Arrangements includes Dr. T. Chittenden Hill, Dr. William A. Rolfe, and Dr. Ralph W. Jackson.

Course in Cancer Research.—Cancer research, stimulated by the approaching visit of Mme. Curie and by the progress in experimentation reported by Dr. Francis Carter Wood, director of the Crocker Laboratory, will be taught at Columbia University during the summer session, it is announced.

The course will be given at the Crocker Laboratory, 1145 Amsterdam Avenue, and will deal with the morphology and biology of tumors, under the direction of Prof. W. H. Woglom, of the laboratory staff.

Dr. Goldman Resigns as President of Bronx Hospital.—On Sunday evening, March 27th, a dinner was tendered by the Board of Directors of the Bronx Hospital to Dr. Alexander Goldman, its retiring president. Dr. Goldman has held the position of president of the Bronx Hospital for ten years. He resigned the presidency of the Board and is taking up his duties as chairman of the Executive Committee of the Medical Board.

In appreciation of his services, the directors of the hospital, at the dinner, presented him with the proper set of resolutions and endowed a ward in his honor, to be called the Dr. Alexander Goldman Medical Ward.

Danger of Radium Is Eliminated by Insulating Body.—Dr. Belclerc, head of a committee of the French Academy of Medicine, says: "It is no longer necessary to fear the handling of radium if proper precautions are taken to protect the body against the penetrating action of the rays. Specialists have known for a long time that lead minimizes the danger, and, therefore, the first step must be care to obtain lead lined gloves, but even then one must not touch radium salts except with pincers. Wooden tables with a lead lining must be provided, or else the legs of the operator will sustain injury, as the rays easily penetrate wood. We are also perfecting a metallic plastron to protect the heart and lungs, while spectacles containing lead salts avert danger to the eyes.

"With such precautions only a small portion of the body is exposed, and if the operators want further to protect themselves all they need to do is to wrap themselves entirely in thin metallic sheets."

Says Sleeping Sickness Is Contagious.—Dr. Kling, head of the Swedish State Laboratory, has verified the theory that sleeping sickness is contagious. He says the discovery was made as a result of experiments in transferring the brain substance of diseased patients to a rabbit and thence to another rabbit. The germ was found in the secretions of the throat and nose.

Personal.—Dr. Hubert Work, president of the American Medical Association, was given a recess appointment by President Harding on March 28th, as First Assistant Postmaster General.

The resignation of Dr. L. Emmet Holt, Carpentier Professor of Diseases of Children, will take effect June 30, 1921. Dr. Holt was appointed Clinical Professor of Diseases of Children by the trustees from July 1, 1921.

Buys Paris Hospital Site.—The Board of Directors of the American Hospital in Paris has bought a new building site near the present location sufficiently large for a hospital of a hundred beds with every modern appointment. The building fund, which already amounts to 3,750,000 francs, will be increased to 7,000,000 francs, according to the plan of the board. Besides this, there has been provided, chiefly from the United States, an endowment fund of 4,300,000 francs.

Vacancies in the Medical Corps of the United States Navy.—There is at present a large number of vacancies in the Medical Corps of the Navy, and examinations are being held at frequent intervals in several of the coast cities in the United States, both on the east coast and the west coast, and also at Chicago, Ill. Circulars of information for persons desiring to enter the Medical Corps of the Navy may be obtained by addressing the Surgeon General, U. S. Navy, Navy Department, Washington, D. C.

◆

Obituary.

PROFESSOR GUSTAV KILLIAN,

of Berlin.

After a prolonged illness, Gustav Killian died on February 24, 1921, at Berlin, Germany. His death is a severe blow to the medical profession, and therefore it may be timely to say a few words about Killian as a scientific leader.

Looking backward over the history of laryngology, it may well be divided into three epochs, the first one beginning with the discovery of the laryngoscope by Manuel Garcia, of Madrid. During that period diseases of the larynx were mainly studied, their pathogenesis recognized and their treatment inaugurated. This era was dominated entirely by the Medical School of Vienna.

With the appearance of Zuckerkandl's work on the anatomy of the nose and its accessory sinuses, the second era began, and resulted in the development of the minor and major surgery of these regions.

The third era, that of bronchoscopy, may justly be called the era of Killian, for it was he who not only originated bronchoscopy but was responsible for many other achievements in that period. A few details of his life may, therefore, be of interest.

Gustav Killian was born at Mainz (Mayence) on June 2, 1860, where he received his early education. After graduating from the gymnasium there, he studied at different universities and passed his examination as Doctor of Medicine at Freiburg i/Br. After service in the army, he followed the advice of his brother, who was laryngologist at Mainz, and began to devote himself to laryngology under Professor Jurasz, of Heidelberg. Luck favored him, for he very soon became lecturer (Privatdozent) of laryngology at Freiburg, after the sudden death of Professor Hack. It was in this place that he accomplished his best work. Laryngologists soon began to notice that there was now an active man in the chair of laryngology at Freiburg. In that early period of his career he published some excellent papers on the anatomy of the nose of the human embryo, on the morphology of the ethmoidal region, on his radical operation upon the frontal sinus, on his method of examining the anterior wall of the larynx, and many more. All these publications showed an exceptionally clear mind, a thorough study of the subject and careful observation, and placed Killian among the best workers in the domain of laryngology.

However, not until the year 1897 was he recognized as a leader in his field. In that year, as is well known, he reported his first successful removal of a foreign body from the bronchi, and with that inaugurated an era in medicine which in the twenty-three years of its existence has brought a wonderful amount of good to humanity. The direct examination of the larynx, the trachea and bronchi by means of instruments devised by Killian, and the possibility of treating directly all these parts by topical applications, etc., is a method that has come to stay. For a number of years the "direct method" has been exclusively employed not only for the removal of foreign bodies, but also for the topical treatment of certain diseases, such as bronchial asthma, pulmonary abscess, whooping cough, etc.

As always happens, Killian's instruments were soon modified, and first by his assistants at Freiburg. Very early this work was taken up by several men in the United States, and developed to such a degree of perfection that one often marvels at the dexterity and successes of some of our colleagues. But the medical world will never forget that primarily it owes all this to the initiative and genius of Gustav Killian.

In the meantime Killian had been called to Berlin, had been promoted to an ordinary professorship—the first one, by the way, created for laryngology in Germany—and had received all honors connected with such a position. This appointment was no sinecure. A large clinic with a large hospital at his disposal meant not only the instruction and education of students, but additional scientific research work. More than once in personal discussions with me he remarked that any man who has no scientific problems to solve should give up teaching. Inspiration is what students need, and one cannot give it unless he is a student and investigator himself.

With such ideas in his mind it was natural that Killian should accomplish something of importance. His last remarkable achievement was the invention of suspension laryngoscopy. Although this cannot be compared in value with bronchoscopy, yet it means a step forward, and has proved of great service in many cases.

On June 2, 1920, surrounded by his friends, pupils and admirers, Killian celebrated his sixtieth birthday, apparently in the best of health. Very soon afterward, however, I received word that he was beginning to fail. I knew that he was suffering from an incurable disease, but the news of his death was nevertheless a great shock. It was not merely a personal affair; it was the loss of a man who was valuable to the whole world, of a scientific worker, from whom the profession was justified in expecting other important revelations, had a kind fate permitted him to live some years more. As it is, laryngologists have suffered the loss of the most remarkable representative of the present era. What Killian has done to increase our knowledge and to enrich our therapeutic means has proved to be of immense and lasting benefit to mankind, and both friend and foe unite in wishing him peace and rest in the place he himself selected for eternal sleep, his beloved Freiburg.

◆

Died.

Andrews.—In Gardner, Mass., on Saturday, April 2nd, Dr. Oren Andrews, aged fifty-eight years.

Berry.—In South Pascagoula, Miss., on Tuesday, March 22nd, Dr. William P. Berry of Memphis, Tenn., aged seventy-nine years.

Bongartz.—In Kingston, N. Y., on Monday, March 28th, Dr. Joseph Bongartz, aged sixty-four years.

Callaway.—In Chillicothe, Mo., on Sunday, March 27th, Dr. James Edwin Callaway, aged eighty-six years.

Cardeza.—In Brooklyn, N. Y., on Wednesday, March 30th, Dr. John Martinza Cardeza, aged forty years.

Carpenter.—In East Greenwich, R. I., on Wednesday, March 30th, Dr. Elbridge Gerry Carpenter, aged seventy-one years.

Carr.—In Pitman, N. J., on Wednesday, March 30th, Dr. Henry H. Carr, aged fifty-seven years.

Coburn.—In Carrizizo, New Mexico, on Tuesday, March 29th, Dr. Charles W. Coburn, aged fifty-four years.

Fitch.—In Medina, N. Y., on Saturday, March 26th, Dr. Willard R. Fitch, aged ninety-five years.

Garten.—In Westchester, N. Y., on Saturday, April 2nd, Dr. Frank Garten, aged thirty-nine years.

Gillette.—In St. Paul, Minn., on Thursday, March 24th, Dr. Arthur J. Gillette, aged fifty-seven years.

Glaubit.—In Rockville Centre, L. I., on Sunday, March 27th, Dr. Robert William Glaubit, aged fifty-six years.

Hanchett.—In Syracuse, N. Y., on Tuesday, March 29th, Dr. Juliette E. Hanchett, aged sixty-four years.

Hartz.—In Philadelphia, Pa., on Friday, April 1st, Dr. Harry J. Hartz, aged thirty-eight years.

Hensel.—In San Diego, Cal., on Thursday, March 17th, Dr. Eugene A. Hensel, aged fifty-three years.

Hochrein.—In Chicago, Ill., on Sunday, March 20th, Dr. George Hochrein, aged forty-three years.

Howser.—In Otisville, N. Y., on Tuesday, March 29th, Dr. Frank P. Howser, aged fifty-nine years.

Kiernan.—In Westville, Conn., on Friday, March 18th, Dr. Edward E. Kiernan, aged thirty-seven years.

Knapp.—In Brooklyn, N. Y., on Friday, March 25th, Dr. Herbert Jefferson Knapp, aged sixty-seven years.

Kohlmann.—In New Orleans, La., on Monday, March 21st, Dr. William A. Kohlmann, aged fifty-three years.

McIlhaney.—In Easton, Pa., on Monday, March 28th, Dr. William Henry McIlhaney, aged sixty-five years.

O'Reilly.—In Acton, Cal., on Wednesday, March 16th, Dr. Edmund Francis O'Reilly, of Tehachapi, aged thirty-three years.

LONDON LETTER.

(From our own correspondent.)

London, *March 22, 1921.*

Exchange Medical Lectures Between Holland and England—Endowment of Mothers—Sir James Cantlie on Clothes—Occupational Mortality—Report of the Special Committee on Venereal Diseases—Dangers Attending the Practice of Psychoanalysis by Unqualified Persons—Crusade of British Red Cross Society—Death Insurance and the Hospitals.

Under the scheme for the exchange of lecturers between Holland and England, the London University has invited the Dutch lecturers named below to give one lecture each on a medical subject, in English, during the present session: Dr. W. Einthoven, professor of physiology, London; Dr. C. M. Ariens, director of Herseninstituut, Amsterdam; Dr. J. K. A. Wertheim Salomonson, professor of neurology, Amsterdam; Dr. Bolk, professor of anatomy, Amsterdam; Dr. J. E. Boeke, professor of embryology and histology, Utrecht; Dr. Hamburger, professor of physiology, Gröningen. The first lecture, entitled, Some Considerations on Tonus and Reflexes, was delivered by Dr. Wertheim Salomonson at the rooms of the Royal Society of Medicine, on January 17th, the chair being taken by the vice-chancellor of London University.

* * *

Dr. Armand Routh, in a lecture given on February 7th to members of the Victoria Institute of London, urged the endowment of mothers among the middle classes. He pointed out, however, that such a scheme in its entirety would cost £140,000,000 a year in Great Britain and Ireland, an impossible figure. But a modification of such a scheme for poor widowed mothers, to women whose husbands were mentally or physically incapacitated, or where the income of parents fell below £200 a year would only amount to £40,000,000 yearly. The speaker stated that many of the 61,715 infant deaths recorded in England and Wales in 1919 might have been saved by improved conditions and knowledge of the problems surrounding motherhood.

* * *

Undoubtedly clothes exert an influence on health, more perhaps than is generally supposed. Sir James Cantlie, a well known authority on tropical diseases who is also noted for his original views and his outspokenness, has recently been expressing his opinion on the subject of clothes. He holds that one pound of clothes for every fourteen pounds of weight is a good hygienic dress principle for men and women. Referring to women's fashions ranging between the Arctic, temperate and torrid zones, he warmly defends corsets. He thinks that the comparative absence of liver trouble in women is due to the equable temperature in women's bodies obtained by wearing corsets. Moreover, it is his opinion that more boys than girls die in childhood, because boys wear half the weight of clothes girls do. One and a half inch of cholera belt do for the waist what the corset does for women. He urges women to do exercises, not for muscular development but to stimulate the body, and to do them in their ordinary clothing.

Industrial medicine has come very much to the fore within recent years, and is likely to occupy the attention of medical men and hygienists more and more as time goes on. In fact, industrial medicine is an important, if not quite the most important, branch of preventive medicine. This truth is being recognized everywhere, and while the progress made in this direction in Great Britain has not been so great as in America, the medical profession and those interested in health matters are awaking to the necessity for maintaining the health of the industrial worker at a high standard. Perhaps the chief exponent here of this comparatively new branch of medicine is Professor E. L. Collis. He has just written an excellent work on the subject, and his words carry great weight. On January 14th Professor Collis read a paper before the Tuberculosis Group of the Society of the Medical Officers of Health. The paper, of which an abstract is given in the February number of *Tubercle,* deals with the influence of dust inhalation upon phthisis.

Dr. Collis takes the view that as the incidence of phthisis is a delicate index of general health, the mere eradication of the tubercle bacillus, even if such an event were possible, would leave general health at the present level ready to succumb to other pathological disturbances, and declared that the aim should rather be to discover how to increase general resistance, taking as a touchstone resistance to phthisis. He then proceeded to group dusts as follows: 1. Living organisms among which ranked the tubercle bacillus. He gave evidence, drawn from the mortality statistics of printers, tailors and bootmakers, in favor of the view that among adults infection passes from individual to individual probably by aerial transmission. The evidence indicated that propinquity of persons, apart from any other influence, was associated with an undue prevalence of phthisis not accompanied by increased mortality from any other cause. 2. Dead organic dusts. This group contains dusts which, he maintained, either had no injurious influence in relation to phthisis unless possibly as carriers of infection, or had some beneficial effect. Among the beneficial dusts he placed fireclay, which contains organic matter washed into it from the overlying coal and coal itself. 3. Inorganic dusts. Some of these, like limestone and plaster of paris, are entirely inert; others, like emery and glass, are inert for phthisis but predispose to bronchitis and pneumonia, while silica alone among dusts predisposes to phthisis as well as to bronchitis and pneumonia.

The injurious influence of silica was profoundly modified by mixing it with coal or fireclay. There was a great variation in the mortality in the different coal fields and by makers of different grades of ganister bricks. Professor Collis asserted that the influence of silica was chemical and not mechanical, due to the inhaled particles becoming colloidal and entering into combination with protoplasm, a colloidal carbon compound. The result was silicotic fibrous tissue, an ideal food for the tubercle bacillus. The presence of organic acids in coal and fireclay prevents the silica particles from becoming colloidal, and so interferes with the chemical reaction. The speaker entered a strong plea for reconsidering the tuberculosis position from the biochemical standpoint, since study of the occupational incidence of the disease, as instanced, definitely indicated that a clue to the problem lay here rather than in bacteriology. In the discussion that followed Professor Benjamin Moore emphasized the necessity for further research into the chemical relations between silicic and carbonic acids. Dr. Ellis pointed out the important part played in tissue reactions by their acidity or alkalinity, and Dr. Sorley drew attention to the theory with respect to the nature of the tubercle bacillus put forward by the brothers Marie.

* * *

Lord Willoughby De Broke, who is the chairman of the Society for the Prevention of Venereal Disease, the society which advocates the use of immediate self disinfection, called attention in the British House of Lords, on March 16th last, to the report of the Special Committee on Venereal Diseases, and asked the Government what steps were being taken to give effect to its findings. It was pointed out that this committee was presided over by a Bishop, and that its members comprised the heads or almost the heads of the various denominations. It also comprised women doctors and physicians and surgeons of the very highest credit. It was appointed with the consent and approval, if not at the absolute instigation, of the Ministry of Health itself, and the Government sent their own witnesses to give evidence. The Government seemed therefore bound to take some notice of the report and to carry its recommendations into effect. This document was of first class importance in the history and study of venereal disease.

First the committee found that sexual continence was compatible with normal health. The committee therefore made the strongest possible recommendation that parents, teachers, ministers of religion, social reformers, and others, should combine in a national effort to assert the moral obligation of chastity. But what was particularly interesting was the reference to self disinfection. "Having regard to the disastrous effects of venereal disease on individual and national welfare," the committee thought the time had arrived when the Ministry of Health should, through local authorities, draw public attention to the grave menace to national health from this cause, and should make it a personal obligation on every individual who exposed him or herself to the risk of infection to take adequate steps to become disinfected and obtain medical treatment where necessary until cured or rendered free from infection. The committee went on to say that no obstacles should be placed in the way of people obtaining the necessary disinfectants from druggists, and that if necessary the law should be altered to enable them to do so. The speaker thought that the way in which the Government was dealing with venereal disease was a failure. The Government could either suppress this report, if able to do so, which he did not think they were or they could try to ignore it and let the whole thing drift on in the way in which they were now letting things drift on. On the other hand, they could take the statesmanlike course of admitting frankly that the application of the knowledge in question had proved successful where directed in a scientific manner. If they did not do that they would be up against a very grave danger, as the knowledge of disinfection was becoming public property.

Lord Sydenham, who is regarded as the spokesman in the House of Lords of the National Council for Combating Venereal Diseases, whose teaching is opposed to that of the Society for the Prevention of Venereal Diseases, in that it does not advocate immediate self disinfection but relies largely on educational propaganda and early preventive measures and treatment, said with regard to self disinfection, that he did not think the Government would be well advised in issuing any authoritative statement on the subject, as such a statement might be misunderstood and lead to an increase of infection. They could not ignore the moral standpoint, and it would be impossible to inculcate into the minds of young boys and girls the idea of self-disinfection. He could not accept Lord de Broke's estimate of the committee's report. It seemed to him to be a rather muddled performance, and some of the opinions expressed did not seem to agree with the weight of evidence.

Viscount Knutsford, the chairman of the London Hospital in the East End of London, the largest in the British Isles, whose organizing powers and business aptitude are proverbial, said that he did not plead guilty to wishing to make sin more easy. But he did feel sympathy with those who were suffering from the disease, particularly with innocent persons who had been stricken down, and of whom he saw a great number. There was no reason why one should not sympathize with people who suffered through sin. One did not refuse sympathy with one suffering from diseases arising from drink or excesses of other kinds and he saw no reason why one should not give his utmost sympathy to and endeavor to cure those who were suffering from this disease. He considered that the time had come when vigorous action should be taken. The figures with regard to venereal disease were almost too great to be believed. In the London Hospital they had 23,000 new cases last year. That was four times more than they had a few years ago. It was impossible to go on any longer doing nothing. They must not be deterred by the idea that if they did something they would be encouraging promiscuous sexual intercourse. If he were Minister of Health he would institute a very energetic propaganda. He would preach first of all that continence and chastity were consistent with good health and with vigor of mind and body. He would preach and picture in the most awful colors the horrors and suffering caused by these diseases. Then he would insist on the necessity for self-disinfection. It was perfectly true that self-disinfection was not by any means a certain safeguard, but there was no reason why the Minister of Health should not make public what precautions could be taken. He might mention what happened in the case of two ships which called at an island in the West Indies, where venereal disease was frightfully prevalent. In one ship, with 650 men on board, there were no fewer than 160 cases of syphilis after it had called at the island. In the case of the other ship the medical officer had taken the trouble to supply the men with disinfectants, and though 950 men went on shore only sixteen cases of syphilis resulted.

Then he would open more clinics, where people could be attended to. The great difficulty with regard to these clinics was that forty per cent. of the patients did not continue to attend until they were cured. That was a thing that the Minister of Health might give his attention to. He thought it might be made an offence to discontinue treatment. He urged the Minister of Health no longer to sit quiet and do nothing, but to start some really active propaganda to stop these diseases. It was a common saying but quite true, that they were really sapping the whole health of the nation.

Viscount Peel, who replied for the Government, said in part that medical opinion was very much divided on the subject of self-disinfection, and he thought it was important, before consideration was given to moral and other aspects of the question, to arrive at some definiteness as to medical opinion, regarding which there ought to be some preponderance on one side or the other. Though it was generally agreed that the danger of infection became slight and remote if the process was carried out by a qualified medical man, it was felt that it was not practicable to give such instructions to civilians generally as would insure that the disinfectants were thoroughly and intelligently applied. Again, there was the medical testimony that the spread of knowledge as to the efficacy of disinfectants would lead to persons running the risk of infection who would not otherwise do so, thus increasing the spread of the disease. It was also urged that serious danger would be caused by these disinfectants being used in many cases as a substitute for the treatment of the disease. Besides there were moral and social objections to the advocacy of self-disinfection; and it was suggested that such a policy would inevitably lower the moral tone of the community and lead to an increase of promiscuous intercourse. Therefore the Government would undertake a very serious responsibility if they allowed the impression to be conveyed that self-disinfection was a true safeguard against disease. He could not give any very definite information at present on behalf of the Ministry of Health, because this question was now receiving or about to receive the attention of the Government, but the considered statements which had been made would be very carefully dealt with. In connection with this subject the following letter from Miss Ettie A. Rout was published in the *Medical Press and Circular*, March 16, 1921, Comparative V. D. Infection Rates.

To the Editor of the *Medical Press and Circular*. Sir: Last year you were good enough to publish some letters of mine concerning the argument in favor of self-disinfection. The matter is now beyond the realm of argument, and I shall be grateful if you will afford me space for the following proofs of self-disinfection. In the years 1915-1916-1917 self-disinfection was not applied extensively among the Overseas Troops, and at times the annual admission rates for venereal disease ran up to over 200 per 1,000. But in 1918 self-disinfection was applied fairly well except among the Australians in the United Kingdom, and the following are the results:

YEAR, ADMISSION, RATE PER 1,000 P. A.

1.	New Zealand forces in France, 1918	60
2.	New Zealand forces in U. K., 1918	90
3.	Australian forces in France, 1918	62.5
4.	Australian forces in U. K., 1918	147.5
5.	Canadian forces in U. K., 1918	81.6
6.	American forces on Rhine, 1920	142
7.	British forces on Rhine, 1920-21	168
8.	British forces on Rhine, 1919-20	200-250 or worse

The Americans on the Rhine are relying mainly on prophylactic stations, and the administration of self-disinfection measures among British Forces on the Rhine is inefficient owing mainly to political and ecclesiastical obstruction, but partly to laxity of the officers, and carelessness among the men. If the administration of self-disinfection were as efficient among the Rhine Forces in 1921 as it was amongst the New Zealand and Australian Forces in 1918 in France nearly two-thirds of the present infections could be obliterated.

It appears to be generally admitted now that self-disinfection properly carried out among troops is a most excellent preventive measure. In fact, enthusiastic advocates of the method stoutly aver that if it be conducted thoroughly it will in time abolish venereal disease. At any rate, it has proved a most satisfactory preventive measure in armies. But its opponents insist that conditions of civil life prohibit the carrying out of self-disinfection efficiently. Its advocates, of course, contend that this can be done. This seems to be the crux of the problem. To the impartial student of the question, it does appear unlikely that in civil life the method can be pursued with results that have been obtained among troops. However, if its success is only partial and it does not bring in its train too many countervailing disadvantages, it will be wise to adopt it. It may and no doubt will increase promiscuous sexual intercourse. On the other hand, if it prevents to a large extent the spread of venereal disease, it will have served its purpose, as there is no evading the truth that the venereal menace is a real one and is sapping the vitality of the nation. Undoubtedly, much educational propaganda is required as the mass of the population learn when and how to employ self-disinfection. This literature on the subject must be written with discretion, and all propaganda whether verbal or otherwise must be of such a nature that while calculated to put the situation in a true light, must not offend flagrantly against decency. It is an extremely difficult question, but the peril is so great and obvious that the bull must be taken by the horns. As pointed out on several occasions, the matter is international, and the outcome of the deliberations here will be eagerly looked for in America and all civilized countries.

* * *

Dr. Kling, the head of the Swedish State Bacteriological Laboratory at Stockholm, is reported to have discovered after fifteen months of research, the microbe of encephalitis lethargica, the socalled sleeping sickness, and to have finally established that the disease is infectious. Dr. Kling has succeeded in inoculating rabbits with the disease by transplanting brain matter of diseased persons found to have contagious secretions in noses, throats, and in evacuations. In commenting upon the results of Professor Kling's investigations, the *Svenska Dagbladet* says that Dr. Kling's conclusions thus seem to coincide with those reached by the French professor, Levaditis, and the English professor, Mackintosh, although they are possibly more definite. This journal might also have added that American investigators have come to somewhat similar conclusions.

* * *

Dr. J. S. Risien Russell, the well known nerve specialist, delivered the lecture on March 16, in the Institute of Hygiene series of addresses on Health Building. He warned of the dangers attending the practice of psychoanalysis by unqualified persons in cases of nervous derangement. With the aid of lantern slides he explained the structure and functions of the nervous system, and laid especial stress on the need for precaution against overpressure and the corresponding need for quiet calm in face of apparent danger or actual illness. He pointed out that psychoanalysis was not born of the war but a certain status had been given it because the Army Medical Authorities permitted it in connection with war neurosis and since the war "psychoanalysts" had sprung up with a rapidity that had been alarming. He thought, therefore, that the time had come when the public should be warned of the danger to which they had become exposed. Because the war office gave its sanction to the treatment, it must not be put on the civil population without much more careful scrutiny and supervision. It was, therefore, with the greatest possible gratification, they saw that new diplomas of psychological medicine have been instituted by various universities and by the Royal College of Physicians and Surgeons. Dr. Russell stated emphatically that any person who had not received proper training should not be allowed to touch the mind.

* * *

The British Red Cross Society is about to embark on a crusade to enlist the services of the whole nation. Special steps are being taken to organize the youth of the country to cooperate in this work by acts of service to the hospitals and to the sick and suffering generally. Sir Arthur Stanley, the chairman of the Executive Committee of the Society, in explaining the scheme, said: It was initiated in order that young and old may join and take part in this great campaign against disease and suffering. The subscription is only four shillings and four pence annually, rather more than a dollar, which may be paid at the rate of one penny, two cents, per week. Each branch of the Red Cross throughout Great Britain is now engaged in obtaining recruits, and it is expected that there will be great rivalry among the counties in efforts to secure new members. The subscriptions from new members will be used only for the counties from which the money is obtained, so that each new member will, among other things, lessen the financial strain on hospitals in which he or she is most interested. The program of aid which the Red Cross asks all to help to carry out includes the care of the wounded exservice man, courses of instruction to fit volunteers to attend those suffering at home from tuberculosis, and duties at infant welfare centres.

A proposal which would provide a goodly measure of financial aid to hospitals has been advanced in an interim report from the Voluntary Hospitals Committee, published recently. This report recommends that a substantial part of the surplus at the disposal of approved societies in respect of health insurance, estimated at £7,000,000 ($35,000,000), should be allocated toward the cost of maintaining members of the societies in hospitals. The committee states in part in their report that the evidence received already has convinced them that it is desirable in the public interest to maintain the voluntary system of hospital management, and also that, mainly owing to the large increase during and since the war of salaries and wages, and the cost of provisions and materials, many of the hospitals are faced with a serious deficiency of income to meet the necessary expenditure; and they hope in due course to make recommendations as to the steps which should be taken to meet this difficulty; but they think it desirable to make this interim report upon a pressing matter. It is understood that the quinquennial valuation of approved societies under the National Health Insurance Acts, which is now at hand, shows a considerable surplus over the amounts required for the purposes of the Acts. Excluding Ireland, the valuation of 4,926 societies and branches containing 2,558,123 members, out of a total of approximately 10,000 societies and branches containing 15,000,000 members, which had been completed on December 24th, last, showed a total disposable surplus of £2,171,576 ($10,857,880); and it is anticipated that when the valuation is completed the total disposable surplus of all the approved societies will not be less than £7,000,000 ($35,000,000). Under the provisions of the Acts, the societies are empowered to submit to the Minister of Health for approval schemes for utilizing the disposable surplus in providing additional benefits during the next five years; and the list of additional benefits as authorized by the Acts includes, besides such matters as increase of sickness, disablement and maternity benefits, and the provision of dental treatment, the "payment of the whole or any part of the cost of maintenance and treatment of members in a hospital or convalescent home." They are strongly of the opinion that, in the interests both of the hospitals and the societies, the schemes to be approved should provide for the application of a substantial part of the disposable surplus in providing a contribution toward the cost of the maintenance of members in hospitals. It will not, they think, be denied that the work of the voluntary hospitals is of great value to the approved societies and their members. Of the patients treated at the hospitals a considerable proportion, about thirty per cent., of the outpatients are insured persons, and the effect of hospital treatment is not only to relieve these patients from suffering but also to reduce the periods during which they are a charge upon the insurance funds. The fact that while depleting the hospital funds the war has had the effect of greatly increasing the surplus available to the approved societies seems to provide a special reason for the consideration by the societies of the claims of the hospitals.

Book Reviews

DOYEN'S SURGERY.

Surgical Therapeutics and Operative Technique. By E. DOYEN. English Edition Prepared by the Author in Collaboration with H. SPENCER-BROWNE, M. B. (Cantab.), etc. Eleve de l'Institut Pasteur; Physician to and Chef de Clinique de l'Institut Doyen. Volume II: Regional Surgery (continued); Operations on the Head (continued), Thorax, Upper and Lower Limbs. London: Bailliere, Tindall & Cox, 1920 (Reprinted). Pp. viii-680.

Surgical Therapeutics and Operative Technique. By E. DOYEN. English Edition Prepared by the Author in Collaboration with H. SPENCER-BROWNE, M. B. (Cantab.), etc. Eleve de l'Institut Pasteur; Physician to and Chef de Clinique de l'Institut Doyen. Volume III: Regional Surgery (continued); Operations on the Abdomen. New York: William Wood & Co., 1921. Pp. ix-811.

The translator apologizes for the long delay which has intervened between the appearance of the second and third volumes, this delay having been caused by the death of Doyen and the editor's enforced absence on military duty. The third volume has but recently been completed. The stupendous work represents the masterly teachings of Doyen, one of France's most famous surgeons. The third and last volume is divided into two parts. The first is devoted to the consideration of abdominal surgery, in which the author incorporated a résumé of his researches into the physiology of the stomach and gastric digestion. Some time ago this work appeared in a separate volume.

The second part of the work is devoted to the generative and urinary organs in both sexes.

While it would appear that some subjects have received greater attention than others, it is apparent that the entire subject matter has been carefully considered and fully discussed in proportion to its relative importance. There are nearly a thousand beautiful illustrations, many of them being photographic reproductions of frozen sections, which reveal most interesting anatomical relations. The author's individuality is stamped on every page, and the editor and translator has faithfully and clearly reproduced the author's views.

The work is most interesting and useful as an exposition of the teachings of an original genius who left an impress of his influence on the surgical teachings of his day. More elaborate and more detailed works on surgery have been published, but none that is so thoroughly suggestive and characteristic of the author's individuality has come from the press in recent years. These volumes constitute a most unique and interesting memento of the life work of a great contemporaneous surgeon, and are well worthy of a place in the surgeon's library.

TUBERCULOSIS.

Tuberkulose-Bibliothek. Beihefte zur Zeitschrift für Tuberkulose. Published by Johann Ambrosius Barth, Leipzig.

The *Tuberkulose-Bibliothek,* edited by Prof. Dr. Lydia Rabinowitsch, offers, in its first number of the year 1921, a series of articles by five of the leading German tuberculosis specialists on the subject of tuberculosis legislation *(Zum Tuberkulose Gesetz).* Prof. Dr. B. Möllers, of Berlin, gives a review of the tuberculosis legislations up to the time of the world war in the countries of Denmark, England, France, Italy, Norway, Sweden, Spain, Hungary, and the United States. It would take us too far to review all the regulations of the various countries enumerated. It suffices to say that in the majority of European countries, Germany included, the principal legislation consists in demanding a notification in case of death from pulmonary or laryngeal tuberculosis. In Norway and Sweden, open cases of tuberculosis must be reported. The enforcement of the law of notification of change of residence is a matter of local option by the various communities. In Sweden no tuberculous individual may be employed in a dairy, nor are tuberculous women permitted to serve as wet nurses or in nurseries in general. A similar regulation exists in Brazil, and in Australia all cases of tuberculosis must be reported. The United States may well be proud of the fact that it has had up to this time the best laws and regulations concerning the control of tuberculosis. It is because of the unexpected and terrible menace of tuberculosis in Germany, during the war and since, that new legislation has been contemplated for the German Empire (they will not yet call it a German Republic).

Prof. Dr. Martin Kirchner entitles his contribution "What may we expect from a new German tuberculosis legislation?" He discusses the need of reporting all open cases, the means of proper diagnosis, isolation, the limitation of occupation, prevention of tuberculosis in schools, compensation, sanatoria, preventoria, convalescent homes, and, lastly, fines for violation of laws. Dr. O. Mugdan, privy sanitary counsellor, questions the wisdom of tuberculosis State regulation such as proposed. He is firmly convinced that the physicians alone cannot accomplish anything worth while without State aid, and comes to the rather pessimistic conclusion that the necessary abundance of milk, fats, and carbohydrates cannot be guaranteed for some years to come, and that the housing problem of the poor is very, very far from a satisfactory solution. Since the cost of carrying out the proposed regulation is to be borne by the individual communities, he believes such procedures would be virtually impossible since most of these communities are far too poor.

Dr. Chr. Harms, physician in chief of the Sanatorium of Mannheim, questions the utility of a Tuberkulosis Reichsgesetz, and wonders if a better development of all the phases of the tuberculosis combat would not make tuberculosis legislation *(ein Tuberkulosis Reichsgesetz)* superfluous.

Lastly, Prof. Dr. Arthur Schlossmann contributes his ideas on the combat of tuberculosis in childhood, and pleads particularly for a better training in early diagnosis of the young physicians, who should also be thoroughly familiar with the relation which the disease bears to all the social and hygienic conditions of the individual in the general community at large.

ORTHOPEDICS.

Orthopedics for Practitioners. An Introduction to the Practical Treatment of the Commoner Deformities. By Paul Bernard Roth, M. B., Ch. B. (Aberd.), F. R. C. S. (Eng.), Senior Surgeon, and with the Charge of Orthopedic Cases, Kensington General Hospital; Member of the Orthopedic Section, Royal Society of Medicine; Late Surgeon, City of London Military Hospital; Senior Orthopedic Clinical Assistant, London Hospital, etc. London: Edward Arnold, 1920. Pp. xii-195.

Anyone who knows the enormous London Hospital as a place where Paul Bernard Roth works, that grimy hostel where all day a steady stream of sick poor flows in and out, weakly infants, dull eyed deformed boys and girls, fathers whom accident has struck down, mothers who have put off until very late and often too late, having their own disease attended to. A dismal throng, and the orthopedists there have ample opportunity to learn what ignorance, unwilful neglect and wonderful home-made cures can do for weakly limbs; how the doctors must be willing to try each new idea, and willing to give up their own. Plaster of Paris is yielding place to mobilization, massage and heliotherapy. Thomas of Liverpool, Bernard Roth senior, Lucas-Championnière, Rollier, of Leysin, Arbuthnot Lane, their ways are all known here, and Roth acknowledges his debt to them.

Owing to poverty and want of time, the newly born diseased are not always seen at once, but the author turns the practitioners' attention first of all to deformities present before birth, the tender corrective care enough when the babies enter the world with the burden of deformity. He passes on to neglected cases, so many, alas! first touching on those acquired at birth through wrong management, prolonged labor or instrumental delivery. He is against operation where care can be assured. Of the diseases acquired after birth rickets comes first, commonly ascribed to underfeeding, whereas it is really due to overfeeding, as Dr. Eric Pritchard maintains, the child getting an excess of semi-oxidized products such as potatoes and biscuits, is not allowed to exercise its limbs enough and gets into the sunlight with too many wrappings and the shade of the perambulator up.

The Deformities of Childhood form a long chapter, particularly those due to tuberculosis of bones and joints. An enticing picture of what sunshine can do is on page 47, a photo by Dr. Rollier of some of his tuberculous youngsters at Leysin in Switzerland, getting visibly well under sun, fresh air and proper food. There is not much sun out Whitechapel way, but Dr. Roth opens the windows and gives the nourishing food. He has great faith in treatment, not operation, particularly with the Thomas splints and endless patience. The deformities due to habit, clothing and too rapid growth, such as lateral curvature of the spine, stooping, round shoulders are not infrequent in a neighborhood where the children have to work in schools not hygienically furnished, and, after school, to carry heavy parcels for tradesmen or lug about the family baby, for which latter they get nothing and prefer the charge of a neighbor's baby at four cents. Those who follow this profession regularly are known as minders. The author gives the correct treatment, though he sadly realizes that unless the child with scoliosis, with ugly bowed legs can be kept for treatment, which the willing, harassed mother can never give it, convalescence will be delayed.

Fractures are introduced by reminiscences of the universal plaster splint and the deplorable results, say, in a Pott's fracture, where the patient rarely walked normally again. He gives his own method, with that of Lucas-Championnière and Arbuthnot Lane, and rather deprecates the bone inlays, now so popular, saying they are often found brittle and not so easy to fix as many maintain.

Dislocations, injuries to joints, to peripheral nerves, amputations and artificial limbs, the treatment of old gunshot wounds have each careful consideration and operative technic, nor does he forget that corns, bunions, pes cavus and hallux valgus may cause much pain to every one, particularly so when they come to hard workers with much standing to do and illfitting shoes. The amount they spend on patent and swift cures is enormous, particularly the tired shop girl with flat foot. They think the complaint not bad enough to go to hospital for; moreover, the weary waiting in the outpatients' room is always dreaded, and, with the girls, the exposing of old shoes often keeps them away.

The page pictures are not quite good enough, and that is the only complaint mingling with our warm appreciation of the book.

DENTAL HYGIENE.

Hygiene, Dental and General. By Clare Elsmere Turner, Assistant Professor of Biology and Public Health in the Massachusetts Institute of Technology; Assistant Professor of Hygiene in the Tufts College Medical and Dental Schools. With Chapters on Dental Hygiene and Oral Prophylaxis by William Rice, Dean, Tufts College Dental School. St. Louis: C. V. Mosby Company, 1920. Pp. 400.

It is curious that the more we get to know about the interdependence of every part of this our body, the greater the number of specialists; yet everything seems to point out a learned general practitioner as the future leader, unless the brooding idea of group medicine comes along. The people are wearying a little of being sent from one doctor to another, and the new terms worry them; they do not really believe there are so many parts in their bodies. Shall those on the borderland be sent to a dentist sometimes? Yes, if in about twenty-five per cent. of the cases of dementia præcox, foci of infection in the teeth alone are the etiological factor.

So, enticing the reader into dental hygiene, the author smilingly tells him there is no way out save by treading the way of hygiene of the central nervous system and of reproduction; four big subjects. So sad and so varied are the dental evils that one almost desires the nutcracker jaws of olden days, when meat and hard food disappeared and seemed to create no great discomfort.

These four divisions commented on, The New Science of Disease Prevention, with a retrospective section on what great men have agonized over and proved true. Immunity is well treated; Communicable Diseases takes a wide survey of what is done when the best is done, but how little is done makes one stand in indecision outside the restaurant with facts from food control beating on our brains while hunger pangs assail our stomachs.

In prohibition days a double interest in good water supply should exist. There are eight necessary qualifications given. It must not be hard. The washerwoman said she was glad when it rained hard; she got plenty of soft water, and was not puzzled like the professor who wondered how a red cow, eating green grass, gave white milk.

Further and further do we travel with Professor Turner. Waste disposal comes next, and everyone knows the condition of a city left unswept even for one day, the dirty dreariness of illkept country districts, the choked rivers, the lumbered up back yards, the smelling privies, the poorly ventilated cottages, will endorse all his ideas for reform.

General hygiene means pondering deeply on school hygiene, on industrial hygiene, all sensibly and thoroughly written. Two appendices from the American Public Health Association Committee, one on the control of communicable diseases, the other on disinfection, land the reader, much improved informationally, at the end of the book. The intelligent knew many of its truths before, but, doubting their power to help, or, through laziness or indifference, content themselves with sharp criticisms on health conditions and the stupid, senseless, expensive, blunderheaded methods they pursue to put things right.

WASSERMANN TEST.

The Wassermann Test. By CHARLES F. CRAIG, M. D., M. A., F. A. C. S., Lieutenant Colonel, Medical Corps, United States Army; Professor of Bacteriology, Parasitology, and Preventive Medicine, and Director of Laboratories, Army Medical School, Washington, D. C.; Formerly Curator, Army Medical Museum, and Commanding Officer, Yale Army Laboratory School. Second Edition, Revised and Enlarged. Illustrated with Colored Plates, Halftone Plates, and Sixty-one Tables. St. Louis: C. V. Mosby Company, 1921. Pp. 279.

Since the publication of the first edition of this excellent monograph on the Wassermann Test in 1918, much has been added to our knowledge of the subject. All of this the writer has endeavored to incorporate in the new volume, with the result that the present work brings the subject up to date in every respect. Certain portions have been rewritten entirely to meet the many changes that have taken place in the technic and interpretation of the test.

Craig's work as a serologist has become too well known to require praise at this late date, and the book under review is a worthy exposition of his experiences and views concerning this important reaction. He still laments the fact that there is no standard Wassermann technic, thus favoring contradictory results, but expresses the belief that reliable results will follow if well qualified serologists only are permitted to make the tests. The author's technic is described in detail, as modified since its original description; several important changes having been made, the most important being the addition of blood grouping in the directions concerning the preparation of the blood cell suspension used in the test.

We do not hesitate to commend this volume as a most valuable guide both for the medical practitioner and the laboratory worker. The author and publisher are to be congratulated on the splendid product of their joint effort.

NURSING.

Eye, Ear, Nose, and Throat Nursing. By A. EDWARD DAVIS, A. M., M. D., Professor of Diseases of the Eye in the New York Postgraduate Medical School and Hospital, and BEAMAN DOUGLASS, M. D., Professor of Diseases of the Nose and Throat in the New York Postgraduate Medical School and Hospital. Second Revised Edition. With Thirty-two Illustrations. Philadelphia: F. A. Davis Company, 1920. Pp. xv-346.

Sir Frederick Treves used to say that the surgical home equipment for the head was the family sponge, a hair pin, court plaster, and the scissors; but today a wider knowledge of the manifold mysteries to which these gateways lead has prevented the mother and nurse from fearlessly sticking in the hairpin or using an unsterilized sponge. Less than fifty years ago the family remedy for a cold was given to each child from the same spoon or glass, and a big silk handkerchief was tied to the nursery fire guard for common use. Tonsillitis was simply a bad sore throat. It was rubbed with hartshorn and oil, and tied up in red flannel; earaches had warm laudanum dropped in or a toasted fig tied on. Sore eyes were bathed with cold tea or anointed with zinc ointment. It was rarely that any doctor was consulted, unless the symptoms became severe. I looked in vain for our old enemy, stye, but found no mention. It had become an hordeolum, whereupon a reflection that a book intended for students as well as doctors might have kept the old name as well.

Davis and Douglass give a comfortable idea that they have written a book meant to instruct thoroughly. No detail which perplexes students is left unnoticed; no usual error is left uncorrected, and the reason for its condemnation shown.

In this, the second edition, much that is new has been added, and an entirely new chapter on Vaccine and Serum Treatment, which is well written. We do not see much about idio for drugs, though they are much commoner than imagined, as doctors will tell you (in private).

The general get up and clear style of the book enables one to be sure of a continued sale and an appreciative tired nurse or student.

PSYCHOPATHOLOGICAL FICTION.

The Passionate Spectator. By JANE BURR. New York: Thomas Seltzer, 1921. Pp. 197.

The reviewer once knew, in Rheims, a sentimental German lady who was afflicted with an affectionate husband and three healthy boys. Their goodness and healthiness got on her nerves. It was all so dull. She spent her leisure reading French novels, and fell in love with her neighbor, a quiet little man, who cared not a hang for amatory fashions and loved his comfortable wife just as much as he liked, also his children.

To his horror, his stout, neurotic German neighbor came one afternoon when he was alone, and passionately declared her love, because she knew he "was ready to go away with her." Well, he did not want such a risky form of recreation, and had to quietly break off any friendships with the family.

Why blame the woman? She was advanced enough to rebel against the opinion that man may have his pleasures and women may not. Let secrecy be abandoned and each couple will be happy in acknowledged liberty. Middle class morality, a suburban conscience, all deter women who are really fretting for adventure, for change, from having joyful, loveful lives. But the book should be included in one of a Neurotic Study Series; it would then be excellent; but for young wives to take its sentiments as a desired possibility would stir up a tumult.

At any rate, the heroine wants this freedom. She introduces herself:

"Usual people marry for everything else in the world but love. I am a usual person."

For eight years, being a bourgeoise young lady, she survived wedding with Sam Stone, "a large, kindly mammal, who consumed large quantities of food." She had three children, but infant paralysis took them all away at one fell swoop. Just as well, for mama was beginning to feel restless, and she begins to tell of "flaming truths which in a few years will be staler than last week's pastry, and all women will learn, even the bedraggledest, that in January there is a hidden June."

Well, let us find this June. The January clouds break to find her in love with a very ugly Herr Kramer, her married music teacher. He flatters and unsettles her view of matrimony, until one day she discovers he has seduced the young daughter of a neighbor. On the top of this her younger sister comes along to stay, having left her husband, because "he realized he was bored," so she has left him her two boys and is going to live alone and be a typewriter. Setchen, the heroine, expostulating, is told not to be "so middle class." "Even beasts knock off the head of their mate when bored. We are too civilized." Setchen learns stenography with Bubbles, and eventually, utterly tired of the ordinary married life, runs away to New York to get work. She finds her sister living with one Richard Carlton, agreeing to part when both are "bored." "We are one hundred years ahead; our openness and cleanness are new," says the advanced Bubbles.

Work with a lawyer is found. Her husband is divorced, and he marries a friend of her youth, whom she finds was his mistress even when her children were alive. Tired of law work, she becomes assistant to Dr. Philip Leighton, a struggling physician. He makes love to her, and she, in return, loves passionately. But money is scarce, and he goes away, sending a note by Dr. Harold Miller, who is to take over the practice, saying he has married a rich widow and is going abroad for a time. Mad and sad, revengeful, still obsessed, she works with Harold Miller until Leighton returns, when, for six months, she yields to his desire, and dodges around the city, meeting him.

One day, however, she opened the office door unexpectedly. There was Another there. He was kissing her! "I rushed out into the corridor, shrieking with laughter. Down the fourteen flights of steps I went." Exhausted (naturally) but tearing around in cars and omnibuses, she falls to the ground. Miller finds her in a hospital, and, of his desperate lovingness, marries her, and saves her from becoming a morphomaniac. Again the heartfelt cry, "Is this all?" which must come from every woman who has to endure life with a man who is just good, and loves her. But she unearths another villain. Mr. Byfield, a neighbor, is no longer in love with his wife, but wants someone who understands, and the understanding one is Setchen! Ah! She is out driving and comes across him as he sits in a wood with the wife of a charming, devoted husband and mother of three children. To this mother, after seduction, another baby comes, a fine child, just like its wicked papa, and its mother dies in the nursing home because he will not come to see his baby. At least, no other cause is given.

Now Miller has to go to Mexico in the Army. Setchen is duller still, until a man tells her she is a wooden fool. "Too much early piety and damp churches." She then meets a man in a tea shop who hates the ignorance of respectability in women their fear of what people would say. He gets her to go home to his lodgings for the evening, and, on the next visit, to stay all night. His frank talk makes her ready for adventure, and her next man is an Irish lecturer, Carnahan, a widower with four children, whose wife had been good but bored him to tears. He asks her to put him up for the night when he calls, and they fool around some days, until he asks her to get a divorce and marry him. Then she understands the glow of passion. Ah! She wants to say gloriously what no one else has said. Heart singing tunefully against heart. Peace that passes all understanding. Alack! A rich woman catches Carnahan. He cannot resist money. Setchen tells him she is going to have a child. "Then, like a maniac, I buried my hands in his blond hair and nearly tore it from his scalp, screaming, 'I could kill you!'" She flies to Chicago, to confess to a saintly Aunt Caroline with a good husband and six children. Afraid of being abhorred, her faltering words come slowly. Joy! The good aunt tells how she herself wisely tolerates a faithless husband and herself has had a twelve year friendship with the husband of the amour of her husband. "There are lots of married people who don't have lovers and mistresses, but they are the dingy, unhappy ones that we take a pound of fruit cake to on Christmas Day. The laws were made by plain people who never had a chance." Let women learn to be free, but it might be well to pause and consider the neurotic lamentations of Setchen.

THE TRANSITION PERIOD.

Debatable Ground. By G. B. Stern. New York: Alfred A. Knopf, 1921.

Debatable ground, in this book, is the question of the whole feminist position interpreted from the viewpoint of the thoroughly nice household. More narrowly, it is the question of how far the young female of the species shall go.

Deb Marcus, the daughter of German Jews living in England, is the battleground for the author's investigation. Deb, whose father and Aunt Stella suffered in their own youth from parental tyranny, is allowed to do practically as she pleases. What she pleases is to go through a maze of philandering in the search for some large emotional experience that shall give color and direction to her whole life. She drifts from one episode to another. Finally she does something which really scandalizes her easygoing family and, frightened and uncertain, she is swept into the harbor of the first safe marriage that offers itself. The great emotional experience has not come, and safely enveloped by the "illusion" of her husband's family, Deb declares that her daughter is going to be brought up in the old way.

". . . right and wrong, good and bad . . . signposts wherever she may stop and wonder. I'm going to superintend her morals; I'm going to say 'don't,' and I'm going to ask questions, and forbid her things. And be shocked whenever it's necessary I should be shocked— . . . Oh, I couldn't bear to see her muddling and experimenting as I've muddled and experimented; a failure as I've failed."

The author of this book is trying to show that the pendulum is about ready to swing back, that modern laxity has rendered reaction inevitable. With this in view she—or he—has given the reader a whole gallery of feminine figures representing every conceivable attitude, and they all argue it about for page after page and chapter after chapter. There is Antonia, who is defiantly virginal; Gillian, who, fortified by her reputation as a scientific "genius," throws caution to the winds and lives with the men of her choice; Winnie, in whom decency has become sheer, stupid convention; Manon, the product of a Bohemian menage, who has a rigid sense of the market value of innocence; Zoe, who lives like a comic opera soubrette but who has, close to the surface, an almost suburban sense of propriety; Nell, young and worshipful and solemn, who takes the phrases of her friends seriously and comes to grief. And then there is Deb, Deb who "attracted adventures because she was so plainly on the lookout" and who plays at love; Deb, who has no guidance, either parental or in any inner sense, of what she wants and what she is willing to sacrifice for it.

Here is where our author misses the point. It is not important that Deb's father and her Aunt Stella let her run wild and afterward turned her out of home plus a checkbook. It is tremendously important that Deb is an emotional drifter, a "pliable, accommodating, imitative creature" who does not know what she wants. Deb is a product of the transition period, though not at all in the sense the author means. Too analytic-minded and too much a child of the twentieth century to be contented merely with drudging domesticity; without any compelling talent or love of work to balance her nature, as Gillian has, Deb is entirely defenceless. She does not know anything about life—she does not even know anything about herself: she is a ship without a chart or a rudder, setting forth on a sea which is steadily growing more turbulent.

If the author had really wanted to find a solution of Deb's problem, instead of proving a theory, it could have been done easily enough. Work, struggle, study, labor—until the grand passion suddenly blossomed by itself, like a gift unsought—with these a strict bringing-up is beside the point. It is not one's parents' view on etiquette that really equip one to face the world; it is one's own knowledge of something far deeper than etiquette.

There are 402 pages of talk in the story of Deb's explorations and her terrified flight to cover. Most of it is clever talk, but there is a great deal too much of it, and it is not always convincing. Interwoven with the thread of Deb's adventures is another problem, that of the German-Anglican in England during the war, as exemplified in the bitter struggle of Deb's brother, Richard, brought up in England, to get himself accepted as an Englishman in that crucial period. The two themes get in each other's way constantly. The book is always written with a certain capable touch, but it is long and talky and argumentative, and it is built around a theory. It will be of interest, however, to those who have daughters to bring up, and also to the daughters themselves.

POSTWAR WORK.

American Red Cross Work Among the French People. By FISHER AMES, JR. New York: The Macmillan Company, 1921.

Now that the roar of cannon is stilled, we can hear the drip of tears; now that the groans of the wounded are hushed, Poverty's commonplace plaint is heard. The great excitement is over; it requires the heroic few to stay and help clear up, to stay among widows and orphans and keep alive the passionate hope that home and fields and garden will flourish again.

Two months after the United States declared war on Germany, the Red Cross Commission, eighteen men, was speeding over the Atlantic; in January, 1919, there were over 6,000 men and women working in France. By the end of August, 1918, the American Red Cross Bureau of Refugees had a delegate in every department outside the war zone, as well as the immense staff working within it. The author states clearly the unavoidable confusion which arose from a new section coming in among those already established, and often speaking no English, but how, when settled, what a blessing their money, supplies and alert service proved to the American wounded and dying. How well they carried out their selfimposed obligation to help the Allied sick has been shown in what they did besides hospital work in helping refugees, in restoring the war zone, in reeducating the wounded, and in fighting tuberculosis. The English boys who came to an American hospital used to enjoy the cheerfulness, the informality, and regretted being transferred. In the tragedy of Serbia's destitution, America gave where France could not. She took over the control. America was rich; Europe was nearly exhausted. But not dollars only, but deeds, completed the work. One of her biggest works is that of a school of pediatrics in connection with the faculty of medicine. An endowment fund of two million francs has been given, half from the Red Cross, half by popular subscription. The money for the building was given by a sum of 250,000 francs raised by the children of the United States as a gift to French children. War conditions had reduced the doctors in towns of 25,000 inhabitants sometimes to two, and army doctors were eagerly made use of when available, particularly as obstetricians. They would leave their wounded to usher into the world a tiny baby for whom no provision had been made, whose welcome was the noise of battle.

To those who want to know, to those who should know, the book will interest and astonish. Let them read.

New Publications Received

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

THE SCHOOLMISTRESS AND OTHER STORIES. By Anton Chekhov. From the Russian by Constance Garnett. New York: The Macmillan Company, 1921. Pp. 305.

ACCEPTING THE UNIVERSE. Essays in Naturalism. By John Burroughs. Boston and New York: Houghton-Mifflin Company, 1920. Pp. x-327.

MASTERPIECES OF MYSTERY. Riddle Stories. Edited by Joseph Lewis French. Garden City and New York: Doubleday, Page & Co., 1920. Pp. 258.

THE FRIEND OF THE FAMILY, OR STEPANTCHIKOVO AND ITS INHABITANTS, and ANOTHER STORY. By Fyodor Dostoevsky. From the Russian by Constance Garnett. New York: The Macmillan Company, 1920. Pp. 361.

ON BONE FORMATION, ITS RELATION TO TENSION AND PRESSURE. By Murk Jansen, O. B. E., Lecturer on Orthopedic Surgery, University of Leiden, Holland. New York, London, Bombay: Longmans, Green & Co.; Manchester: University Press, 1920. Pp. 114.

AN INTRODUCTION TO CHEMICAL PHARMACOLOGY. Pharmacodynamics in Relation to Chemistry. By Hugh McGuigan, Ph. D., M. D., Professor of Pharmacology, University of Illinois, College of Medicine. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xii-418.

THE DISEASES OF THE NEW BORN. By August Ritter von Reuss, Assistant at the University Children's Clinic and Director for the Newborn at the First University Women's Clinic in Vienna. With Ninety Illustrations. New York: William Wood & Co., 1921. Pp. xii-626.

THE JOHNS HOPKINS HOSPITAL REPORTS. Tuberculous Salpingitis. A Clinical Study of Two Hundred Cases, by J. P. Greenberg. From the Gynecological Clinic of the Johns Hopkins Hospital. Volume XXI: Fasciculus II. Baltimore: The Johns Hopkins Press, 1921. Pp. 156.

THE JOHNS HOPKINS HOSPITAL REPORTS. Pathological Anatomy of Pneumonia Associated with Influenza. By W. G. MacCallum, M. D. From the Department of Pathology, the Johns Hopkins University, Baltimore. Volume XX: Fasciculus II. Baltimore: The Johns Hopkins Press, 1921. Pp. 249.

THE JOHNS HOPKINS HOSPITAL REPORTS. The Pathology of the Pneumonia in the United States Army Camps During the Winter of 1917-18. By William G. MacCallum, M. D., Contact Surgeon, U. S. Army. From the Pathological Department of Johns Hopkins University, Baltimore. Volume XX: Fasciculus I. Pp. 147.

PHYSICAL SIGNS IN THE CHEST AND ABDOMEN. By A. J. Jex-Blake, M. A., M. D. (Oxon.), F. R. C. P. (London), Physician to St. George's Hospital; Assistant Physician, Hospital for Consumption, Brompton. With Twenty-seven Illustrations. London: J. & A. Churchill; Philadelphia: P. Blakiston's Son & Co., 1921. Pp. 119.

SURGERY: ITS PRINCIPLES AND PRACTICE. By Various Authors. Edited by William Williams Keen, M.D., LL. D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume VII, with Three Hundred and Fifty-nine Illustrations, Seventeen of Them in Colors. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 855.

DIAGNOSIS AND THERAPEUTIC TECHNIC. A Manual of Practical Procedures Employed in Diagnosis and Treatment. By Albert S. Morrow, A.M., M.D., F.A.C.S., Late Lieutenant Colonel, M. C., U. S. Army; Attending Surgeon to the City Hospital, and to St. Bartholomew's Hospital; Consulting Surgeon to the Nassau Hospital, Mineola, L. I. Third Edition, Entirely Reset. With Eight Hundred and Ninety-two Illustrations, Mostly Original. Philadelphia and London: W. B. Saunders Company, 1920. Pp. 894.

WIND ALONG THE WASTE. By Gladys E. Johnson. New York: The Century Company, 1921. Pp. 278.

GHOSTS. A Samuel Lyle Mystery Story. By Arthur Crabb, Author of *Samuel Lyle, Criminologist*, etc. New York: The Century Company, 1921. Pp. 261.

OPTIMISTIC MEDICINE, OR EARLY TREATMENT OF SIMPLE PROBLEMS RATHER THAN THE LATE TREATMENT OF SERIOUS PROBLEMS. By a Former Insurance Man. Philadelphia: F. A. Davis Company, 1921. Pp. ix-318.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY, Thirty-third Session. Held at the Moraine Hotel, Highland Park, Ill., May 31, June 1 and 2, 1920. Edited by Oscar M. Schloss, M. D. Volume XXXII. Pp. 353.

LABORATORY MANUAL FOR THE DETECTION OF POISONS AND POWERFUL DRUGS. By Dr. Wilhelm Autenrieth, Professor in the University of Freiburg, i. b. Authorized Translation by William H. Warren, Ph. D. Fifth American Edition, with Twenty-five Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xv-342.

RECREATIONS OF A PSYCHOLOGIST. By G. Stanley Hall, Author of *Adolescence; Educational Problems; Founders of Modern Psychology; Jesus, the Christ, in the Light of Psychology; Morale: The Supreme Standard of Life and Conduct.* New York and London: D. Appleton Company, 1920. Pp. ix-336.

THE SEX FACTOR IN HUMAN LIFE. A Study Outline for College Men. By T. W. Galloway, Ph. D., Formerly Professor of Zoölogy, Beloit College; Author of *Text Book of Zoölogy; Use of Motives in Moral Education; Biology of Sex.* New York: The American Social Hygiene Association, 1921. Pp. 142.

PRINCIPLES OF GENERAL PHYSIOLOGY. By William Maddock Bayliss, M. A., D. Sc., F. R. S., etc., Professor of General Physiology in University College, London. Third Edition, Revised. With Two Hundred and Sixty-one Illustrations. New York, London, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1920. Pp. xxvi-862.

FROM NEWTON TO EINSTEIN, CHANGING CONCEPTIONS OF THE UNIVERSE. By Benjamin Harrow, Ph. D. Second Edition, Revised and Enlarged. With Articles by Professor Einstein, Professor J. S. Ames (Johns Hopkins), Sir Frank Dyson (Astronomer Royal), Professor A. S. Eddington (Cambridge), and Sir J. J. Thomson (President of the Royal Society). Portraits and Illustrations. New York: D. Van Nostrand Company, 1920. Pp. 116.

EPIDEMIC RESPIRATORY DISEASE. The Pneumonias and Other Infections of the Respiratory Tract Accompanying Influenza and Measles. By Eugene L. Opie, M. D., Colonel, M. R. C., U. S. Army; Professor of Pathology, Washington University School of Medicine; Francis G. Blake, M. D., Major, M. R. C., U. S. Army, Associate Member of the Rockefeller Institute for Medical Research; James C. Small, M. D., Formerly First Lieutenant, M. C., U. S Army; Bacteriologist, Philadelphia General Hospital; Thomas M. Rivers, M. D., Formerly First Lieutenant, M. C., U. S. Army; Associate in Bacteriology, Johns Hopkins University. Illustrated. St. Louis: C. V. Mosby, 1921. Pp. 402.

ON DISEASES OF THE LUNGS AND PLEURÆ INCLUDING TUBERCULOSIS AND MEDIASTINAL GROWTHS. By Sir R. Douglas Powell. Bart., K. C. V. O., M. D., (Lond.), F. R. C. P., Hon. D. Sc. (Oxon.), M. D. (Dublin), F. R. C. P. I., LL.D. (Aberd. and Birm.), Physician in Ordinary to H. M. the King; Consulting Physician and Emeritus Lecturer on Medicine to the Middlesex Hospital; Consulting Physician to the Hospital for Consumption and Diseases of the Chest at Brompton, and to the Ventnor Hospital; Knight of Grace to the Order of St. John of Jerusalem; and P. Horton-Smith Hartley, C. V. O. M. A., M. D. (Cantab.), F. R. C. P., Late Fellow of St. John's College, Cambridge; Physician with Charge of Out Patients to St. Bartholomew's Hospital; Senior Physician to the Hospital for Consumption and Diseases of the Chest at Brompton; Member of Council (Late Hon. Sec.) of the King Edward VII Sanatorium; Consulting Physician to the Daneswood Sanatorium. Sixth Edition, with Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xx-798.

Practical Therapeutics

BROMIDES IN DIGESTIVE DISTURBANCES.

By P. M. Besse, M. D.,
and
P. Goutzait, M. D.,
Genevà, Switzerland,
Faculty of Medicine, University of Geneva.

The pharmacodynamic action of the bromides consists, as already known, in the diminution of exaggerated excitability of the psychomotor zones of the brain and in the moderation of the nervous, instinctive and psychic activity. Through empirical evidence which has been gathered in the course of several years we have determined that, beside its usual activity in depressing the central nervous system, bromide medication favorably modifies dyspeptic, cardiac and toxirenal phenomena.

Up to the present time scientific opinion has been unfavorable to the use of alkaline bromides for affections of the alimentary system. A deeply rooted prejudice affirms that this medication exercises an irritating influence upon the gastrointestinal mucosa. This prejudice is probably due to the fact that, for a long time, the potassium salt was the alkaline bromide employed, which in itself deserves this reproach in every sense of the word, as it exercises an unfavorable effect upon the gastric mucosa (Manquet, Pouchet), in addition to its specific action on the heart. Sodium bromide, on the other hand, has always proved itself completely efficient in the affections mentioned above without the slightest inconvenience resulting, as can be seen from the following observations:

"If one wants to make use of the medicinal influence of bromide alone," says Pouchet in his *Precis de Pharmacologie*, "one must have recourse to sodium bromide, which can be administered without any drawbacks, in sufficiently large doses." The mechanism of the action of sodium bromide in affections of the digestive tube is complex and not yet completely elucidated. Its action in depressing the central organs and, hand in hand with this, in depressing the whole nervous system, no doubt plays the preponderant rôle, for there exists an intimate connection between digestive functions and the central nervous system; moderation of the hyperesthesia of the gastrointestinal mucosa (modification of the exaggerated secretion, diminution of the rapidity of transit, suppression of the primary or secondary spasmophilia). In any case, these effects are incontestable and manifest themselves sometimes with such constancy and perseverance that in certain cases of organic lesions they cause harm by showing a delusive amelioration and hindering in this way the surgical intervention which alone could be efficacious.

Therefore, in using a bromide in gastrointestinal affections, we invariably choose the bromide of sodium. Often, however, instead of simply an aqueous solution of sodium bromide we make use of a prepared cube which is on the market under a trade name (sedobrol), which contains seventeen grains of sodium bromide associated with vegetable extractives and seasoning. We administer this by dissolving one cube in half a cupful of very hot water, and our experience has been that this hot, salty, isotonic solution passes very quickly through the stomach and the bromide which it contains exercises no secondary irritant action upon the gastric mucosa. As no taste for bromide is perceptible, there is often an important psychic effect, the cup of broth conveying to the patient simply the idea of an article of diet, consequently, the exhibition of bromide in this form becomes an easy matter, acceptable to the patient, and regularity of medication is assured. Furthermore, the diminution of the intake of common salt, which imposes itself in all indications for bromide, is made easy by the use of this prepared cube.

To illustrate the preceding, we have chosen from a vast clinical material those cases which we consider most typical:

Case I.—S. L., forty-eight years old, male. Patient suffered from polyglandular insufficiency and very evident gastrointestinal insufficiency, insomnia, dyspepsia, chronic diarrhea, and hyperacidity, with progressive decrease in weight. His physician had diagnosed the condition as cancer, but repeated examinations showed no blood whatever in either the stomach or the stools. Regular routine therapy and even some special measures produced no favorable effect upon the dyspeptic condition. Finally moderate doses of the bromide preparation (one and a half to two cubes daily) were given continuously, with the result that the insomnia and the dyspepsia were overcome and a regaining of the weight and complete subjective cure of the patient were brought about.

Case II.—Mrs. C. J., forty-eight years old. The patient had suffered from dyspepsia for some time, with great decrease in weight — seventy-seven pounds in two years. The abdomen was soft, fat and painful. There were aortic pulsations in the abdomen and the patient suffered from tachycardia and insomnia. Her general condition pointed to neoplasm. The patient was treated with the bromide preparation, four of the cubes first being administered daily, then three, then two, in connection with a regular salt poor diet. In a few weeks her weight increased, the symptoms of dyspepsia disappeared, and there was a pronounced diminution in the pains.

Case III.—V. Z., male, forty-four years old. The patient had suffered from dyspepsia during the past fifteen years, with great pain. Wassermann reaction was negative. Recent decrease in weight amounted to seventeen and a half pounds. Two to six of the bromide cubes daily combined with a salt poor diet at the beginning produced debility and hypotension and could not arrest the decrease in weight. By and by the patient became accustomed to the medication, regained weight and strength, and took up his occupation, which he had intended to abandon. He was cured in six months, and there was a progressive withdrawal of the bromide cubes. The case has been under observation and the patient has shown no symptoms of a relapse.

Case IV.—F. M., male, forty-six years old. During the last twenty years the patient had suffered from constipation, flatulency, and epigastric pains, which disappeared on eating. Typhlitis, chronic appendicitis, and gastric ulcer of long standing were considered. The bromide broth and withdrawal of salt brought about an apparent cure in two months, but a pronounced relapse occurred when an attempt was made to diminish the quantity of the broth. For six months the patient was given the bromide broth in large doses, and the improvement in his condition was steady.

Case V.—W. C., forty-three years old. There was present hyperchlorhydria of long standing. There had been a recent relapse, with pains, induration of the pyloric region, colitis, fetid gas, debility, and decrease of weight — twenty-two pounds in less than one year. Sodium bromide in decreasing doses, without special diet or any other treatment, during six months, brought back all the lost weight and strength to the patient. Along with the reduction of the pains in the colon and stomach the induration disappeared. There was no question of the presence of carcinoma, as had previously been supposed, but simple pyloric spasm.

BLOOD TRANSFUSION UP TO DATE.*

By George I. Miller, M. D.,
Brooklyn.

Blood transfusion has reached a scientific and practical basis for therapeutic purposes. The almost forgotten, wonderful remedy passed its experimental stage so that we are now enabled with accuracy and safety to transfer from donor to patient a definite quantity of blood. The recent graduate and older physician who keeps abreast with the literature and practice will promptly suggest blood transfusion in all cases of excessive acute hemorrhage or in pathological lesions which show a diminution of red cells to less than 3,000,000 to the c. mm. with the hope of prolonging the patient's life or to buoy him over a critical period prior to or after an operation.

The present era for and methods of blood transfusion is a crystallization of attempts to perform the operation in previous centuries. The atmosphere of material progress enabled some of us to abandon precedent and bring forth new ideas which embrace several cardinal principles of, a, testing of blood; b, grouping of donors; c, when should blood transfusion be performed; d, indications for transfusion; e, methods of operation.

TESTING OF BLOOD.

The blood of one person is not always compatible with that of another, because the serum of one person might dissolve the red corpuscles of another. In the *Bulletin of Johns Hopkins Hospital*, March, 1910, Moss published his studies of isoagglutinins and isohemolysins. He showed that the blood from two individuals may not mix well because of the fact that the red corpuscles of one or of each may be agglutinated by the serum of the other and that the corpuscles agglutinated in this way may be hemolyzed as well.

The blood of members of the same family may be as incompatible as that of alien blood. Children of the same family often belong to different groups. The statement made by a French pathologist that the blood of husband and wife are compatible after they have lived ten years together is disproved by a patient of Dr. S. Herman, Mrs. R., who was married and lived with her husband forty years. The test showed that his corpuscles were agglutinated by her serum and that her red cells were agglutinated by his serum.

In selecting a donor, in addition to making hemolytic and agglutination tests, he should be physically healthy, free from any blood disease, negative to a Wassermann test, malaria, diabetes, hemophilia, not having recently recovered from typhoid fever, influenza, pneumonia, diphtheria, rheumatism, or tuberculosis.

Male or female from the ages of twenty years to that of sixty-five years are qualified donors when their blood shows 5,000,000 red cells to the c. mm. The phlebotomy of a donor at the age of sixty or more may be life saving to himself by preventing a stroke of apoplexy. Polycythemia patients are plethoric donors and should supply blood to their own advantage. Patients with high blood pressure, whose blood is not changed by diseases are excellent donors. They will be personally benefited by offering their blood. Donors who recovered from infantile paralysis or other infectious diseases have in their blood antibodies of curative value to patients sick with the same ailment. Blood of a woman in the tenth day in puerperium has been transferred with curative effect to a case of hyperemesis of pregnancy. I have transferred blood from a white donor to a colored woman with benefit to the patient.

GROUPING OF DONORS.

All individuals soon after birth may be grouped into four distinct classes depending upon the agglutination power of the serum of one group to cluster the red corpuscles of that of the other. In twenty per cent. of agglutinations of red corpuscles we have also hemolysis or disintegration of cells. This four class division applies to all blood, whether normal or pathological, irrespective of race or color. The group to which a blood belongs becomes fixed by the third year of life and remains constant. It is not influenced by age, disease or transfusion of blood belonging to another group.

Agglutination is an early stage of hemolysis and is always present where hemolysis takes place. Agglutination may occur without hemolysis. All serum contains a protective agent (antihemolysin) for its own corpuscles, to prevent hemolysis.

TECHNIC OF GROUPING BLOOD.

Procure serum of Groups II and III. One drop of Group II serum is placed on a glass slide near one end, and one drop of Group III serum is placed on same glass slide near the other end. A drop of blood from the person to be grouped is mixed with each of the serums on the slide and the reaction noted.

---

*Read before the Clinical Society of Bikur Cholim Hospital, Brooklyn, N. Y., January 18, 1921.

I. If agglutination of the corpuscles takes place in the group II serum and not in III the blood being grouped belongs to group III.
II. If agglutination is noted in group III serum and not in II, the blood belongs to group II.
III. If agglutination is noted in both groups II and III serum, the blood being grouped belongs to group I.
IV. If agglutination does not occur in either serum, the blood belongs to group IV.

The prevailing tendency to determine the patient's group and then transfer blood of a donor of the same group is an unsafe practice, because a small percentage of agglutination will occur which will cause sharp reaction, chill and fever. Careful testing of a donor's blood is essential and transfusions should be performed when the blood is absolutely compatible and not otherwise. Exceptions to this rule hold good for infants under six months of age. The red cells of children under that age cannot be agglutinated and their serum does not agglutinate a donor's corpuscles. Therefore any donor, regardless of group, is compatible. In isolated cases incompatibility in infants' blood has been noticed so that it is safer to test the blood of the infant with the blood of its own mother if she be the donor, preliminary to transfusion.

WHEN SHOULD BLOOD TRANSFUSION BE PERFORMED?

The operation of transfusion of blood should be recommended early in the disease and not ten minutes from the graveyard. Inviting one to do blood transfusion when the patient is moribund from disease will bring disrepute to a valuable therapeutic measure, it will reflect on the operator and will add little credit to the physician.

Blood transfusion to serve a definite purpose must not be used as a last remedy and should be resorted to when it will do the most good to the patient, at a time at least when it can still act as a stimulant to the vital centres and the blood producing organs. The addition of fresh, warm, living, whole blood to a patient from another individual may save a life, cure a pathological condition present or improve and prolong life. The operation is a surgical measure, it returns the elements of blood tissue which the hemopoietic organs of the patient are unable to furnish. These elements may be essential to replace loss of blood, to increase coagulability or to stimulate resistance to infection or toxic conditions.

INDICATIONS FOR BLOOD TRANSFUSION.

The indications for transfusion are suited in two great classes, acute hemorrhages and pathological conditions. In severe hemorrhage it is a specific remedy and brings the most brilliant result. In pre-operative and post-operative hemorrhages from the nose, throat, stomach, intestines and rectum; from the uterus and fallopian tubes; from pathological, accidental or suicidal opening of a bloodvessel in the limbs or neck; obscure hemorrhage following one to three weeks after an operation and not hemophilic in nature will be cured by transfusion after coagulose, horse serum, calcium chloride, sodium citrate solution, and other remedies fail.

Bleeding from infectious disease will be stopped by transfusion. Hemorrhage complicating typhoid fever will stop by transfusion. Hemophilia cases are cured by early and repeated transfusion of whole blood by adding enough prothrombin to produce clotting. In these patients the blood often fails to clot in an hour or more. Hemorrhage in the new born is rapidly checked by transfusion of blood direct into the superior longitudinal sinus by puncturing the anterior fontanelle in the midline, since it is difficult to enter the veins of infants.

Secondary anemia.—Bleeding from any part of the body from an infection or toxic process in which there is destruction of circulatory elements, will be checked by transfusion of blood.

In pathological conditions.—In chronic jaundice due to common duct obstruction, transfusion will prevent post-operative hemorrhage. These patients usually do well for a few days after operation, then have hemorrhage, grow weak and suddenly die. Blood transfusion will tide them over and save them from a fatal cholemia.

Splenic anemia and Banti's disease are benefited by transfusion preliminary to splenectomy. The transfusion makes the patient a safer surgical risk. In this disease the spleen is of large size, the anemia of the chlorotic type with a marked leucopenia. It is often associated with hemorrhages from the mucous membranes of the nose, stomach and in the skin. There is greater relative reduction in amount of hemoglobin than in number of red cells which rarely show less than 3,000,000 per c. mm. There are no extensive changes in the red blood cells and there are no embryonic forms. Pathologically there is general fibrosis of the spleen, including the reticulum associated with its encroachment on the malpighian bodies, even obliterating them, distension of the sinuses and desquamation of the endothelium of the sinuses.

Patients with extreme anemia during or after pregnancy or after delivery will, by a timely blood transfusion, be saved from local or systemic infection. Pernicious anemia has in the remedy of whole blood transfusion and splenectomy and the removal of possible foci of infection all that medical science can offer to the patient.

Repeated transfusions stimulate the bone marrow to action and prevent secondary changes in the various organs, while the removal of the spleen diminishes the amount of blood destruction and the removal of the infected areas will overcome toxic conditions which Percy believes to be a possible etiological factor of the disease. The patient improves after transfusion and in early cases lasting remissions take place, and even in advanced cases life can be prolonged by repeated transfusions.

Bacteremia cases have been successfully buoyed over by repeated blood transfusion. Furunculosis, usually the result of undermined health, has been cured by transfusion. Septicemia postpartum or postabortive, pyemia, ulcerative endocarditis, are often benefited by transfusion of whole blood. A volume of antibodies and healthy red cells stimulate the system and add resisting power. In all bacterial cases it is suggested to first immunize the donor with a vaccine prepared from the patient's blood preliminary to transfusion.

In illuminating gas poisoning there is destruction of the hemoglobin in the red cells. In such cases immediate phlebotomy of two to four pints of blood followed by blood transfusion of whole blood will return a sufficient quantity of fresh corpuscles with hemoglobin to save the patient's life.

METHODS OF BLOOD TRANSFUSION.

Two principal methods of blood transfusion are now in vogue: a, The medicated blood by addition of sodium citrate to prevent clotting; b, the transferring of whole pure blood from donor to patient by means of special valves or shuttles which regulate the flow of blood.

Doctor Agote, of Buenos Aires, Argentine, was the originator of the citrate method of blood transfusion and has perfected the technic of the procedure. His method of medicating blood has been ably brought to the attention of the North American physician by Dr. Richard Lewisohn, of New York, in several articles on the subject in which he describes his conclusions as to the safety of the drug used and recommends the addition of 0.2 per cent. of sodium citrate to the blood to prevent clotting. Other men use two and one-half and even three per cent. solutions. To 450 c. c. of blood add fifty c. c. of sodium citrate solution, two per cent, two and one half, or three per cent. The solution must be freshly prepared in distilled water. The drug must be chemically pure. The solution is sterilized in an autoclave. It should not be used unless perfectly clear.

Sodium citrate solution administered slowly intravenously has the property of controlling all types of bleeding, internal as well as surgical. Large doses have been successfully used to obviate hemorrhage in cases in which bleeding was anticipated at operation. The optimum dose for adults is six to eight grams in a thirty per cent. solution and one to three grams in greater dilution for children.

The method I employ is that of whole blood. I use two different instruments which I devised and brought to the profession through the Brooklyn Surgical Society, April 1, 1915. My first transfusion with these instruments was demonstrated December 21, 1914, at the Jewish Hospital, of Brooklyn. The mechanism of the instruments is the establishment of two canals by means of which a Record Syringe, twenty c. c., is connected, alternately with a vein of the donor and then with a vein of the patient.

Pure, warm, whole blood is transferred without saline solution, without chemicals and without paraffine lining of the instrument or syringe. The technic is simple and as follows: Sterilize the instrument and cannulæ the same as other instruments before an operation. Immerse a twenty c. c. syringe in pure alcohol for thirty minutes. Have two basins with cold saline and cold sterile water to rinse the syringe.

Place two tables at right angles upon which the patient and donor are stretched head to head, so that the right elbow of one can meet the left elbow of the other on a small table placed in the angle formed by the two long tables.

Introduce a cannula into the median basilic or cephalic vein of both donor and recipient by piercing through the skin. The rubber tubes leading from the instrument are connected to the cannulæ. A twenty c. c. Record Syringe is connected with the stem of the instrument and blood is aspirated. When the syringe is filled the lever of the valve is turned towards the patient and the blood is injected.

In the instrument known as the shuttle no lever is necessary; the syringe slides with the stem of the apparatus towards the patient's arm. Filling and emptying the syringe takes place two or three times a minute so that clotting of the blood is prevented.

By this method I have transfused 257 times in quantities varying from 100 c. c. to 1,200 c. c. at a time, with no ill effect to the patient or donor. In my series of transfusions, I had three cases which had chills and eighteen patients had febrile reactions. The valve or shuttle can also be used in place of the Potain Syringe in thoracentesis and subdermic saline injections, etc.

700 St. Marks Avenue.

REFERENCES.

Garnett, A. T. P.: *American Journal of Obstetrics*, August, 1917.

Kaiser, A. D.: *Archives of Pediatrics*, 1915, xxxii, p. 519.

Moss: *Bulletin of Johns Hopkins Hospital*, March, 1910.

Mayo, William J.: *Journal A. M. A.*, August 21, 1920, p. 541.

Miller, George I.: *Medical Record, September* 11, 1915.

Idem: New York Medical Journal, March 13, 1920.

Idem: Ibid, March 20, 1920.

Idem: Ibid, September 4, 1920.

Neuhof and Hirshfeld: *Ibid*, January 15, 1921.

Percy, N. M.: In *Surgical Diagnosis* of A. J. Ochsner.

THE INJECTION METHOD FOR THE TREATMENT OF BOILS.

A Preliminary Report.

By David Lazarus, M. D.,
New York.

It is only by the constant trial and use of medications in the treatment of certain diseases that the best and most rapid cure of that ailment is attained. Few specific drugs exist, such as quinine for malaria, mercury or salvarsan for syphilis, salicylates for acute rheumatism, or iodides for the tertiary syphilitic states, and it is therefore a known fact that many medicines and methods have been suggested for the cure and prevention of boils.

True though it is that this disease is caused perhaps by some constitutional trouble or by some outside infection primarily of a hair follicle, still there are a number of cases in which no perceptible or tangible cause can be ascertained or shown by any means of examination; in fact, the patient himself at the time of his suffering is little concerned as to the cause, but at once wishes the amelioration of the symptoms and pain of the ill looking boil upon his neck, arm, or body. However unconcerned the patient may be as to the cause, the physician should not be negligent in the thorough examination of the patient, not only physically but also as to the examination of the blood and urine.

Without a doubt many remedies have been offered and suggested for the cure and prevention of boils, and it is with this in mind that I offer a simple method for their rapid disappearance, a remedy having for its object the abolition of the old fashioned poultice, or the immediate cross incision or the simple incision and drainage. Many patients object to the use of the cold steel, as they call it, that is, the scalpel.

In this preliminary report I desire to call the attention of the medical profession to the value of injections of iodine and camphor for the relief and cure of boils. This, with the external application of an ointment having for its main ingredients phenol and ergot will in almost all cases bring about an early disappearance of the boil without surgical intervention.

At a future date I shall submit to you a more complete report on the exact method of procedure in this treatment.

327 Central Park West.

Treatment of Abortion.—D. S. Hillis (*Surgery, Gynecology and Obstetrics,* December, 1920) states that:

1. A series of 200 cases of septic abortion, divided equally into those curetted and those let alone, showed strikingly that the cases with no local treatment (conservative) had fewer days of fever, shorter stay in hospital, fewer complications, and a lower mortality.

2. A six months' clinical study showed that no operative procedure should be carried out in septic cases until they are five days' fever free, when they become so called nonseptic cases.

3. A study of 122 cases of socalled nonseptic abortions showed: That 63.11 per cent. of abortions occurred between the second and fourth months, and a history of previous abortions was secured in thirty-five per cent.; that 32.35 per cent. of the abortions were self or criminally induced and potentially septic; that 61.46 per cent. entered the hospital with a temperature above 98.8° F.; that while nine of the fifty-five cases on the active list did not have to be curetted, twenty-seven of the sixty-seven on the expectant list had to be operated upon; that five septic cases that were discharged not curetted returned because of resumption of hemorrhage; that there was no striking difference between the active and expectant lists in average days of temperature, lochia rubra, and stay in the hospital; that there were only two complications and the mortality was nil.

Cases of septic abortion should receive no local treatment until they are at least five days' fever free; the one exception being hemorrhage that threatens life.

This nominal period converts a septic case into a socalled nonseptic, which has fewer days of fever, a shorter stay in the hospital, fewer complications, and a lower mortality.

Socalled nonseptic cases should be curetted as a routine, for forty per cent. of expectantly treated cases have to be curetted. Curettage insures an empty uterus and prevents subsequent bleeding.

Management of the Cervical Stump in Supravaginal Hysterectomy.—Dougal Bissell (*Surgery, Gynecology and Obstetrics,* December, 1920) summarizes his findings as follows:

1. If the action of the round ligaments, when these ligaments are anchored to the cervical stump, effects a change in the position of the cervix, then this change of position must be toward the symphysis and from the coccyx, and as the normal position of the cervix is in the immediate region of the coccyx, any marked change of its position toward the symphysis constitutes a displacement.

2. If, when the round ligaments are anchored to the normally posed cervix, the position of the cervix after operation is found maintained, it is proof that the anchored round ligaments have had no influence upon the position of the cervix.

3. A normal fascial diaphragm maintains independently the cervix in a normal position. Its action is constant and its resistance greater than that of the round ligaments, so that the influence of the anchored round ligaments upon the cervix must be nil when the fascial pelvic diaphragm is normal.

4. If the posterior area of the fascial diaphragm is stretched by a retroposed corpus or tumor in the cul de sac of Douglas so as to advance the cervix toward the symphysis, shortening of the uterosacral or posterior ligaments is a more logical procedure than anchoring of the round ligaments.

5. If the entire fascial diaphragm has been injured sufficiently to permit of the cervix advancing and descending toward the vulva, and an intraabdominal removal of the corpus is deemed advisable, then the corpus should be removed without reference to the position of the cervix, and the prolapse of the cervix with the vaginal vault corrected subsequently by lapping the fascia of the anterior vaginal wall.

6. No adequate proof has yet been offered to show that the influence of the round ligaments, when anchored to the cervix, enters as a factor, in the slightest degree, in maintaining the normal position of the cervix nor in restoring a displaced cervix to normal.

7. Prolapse of the cervix does not and cannot occur after supravaginal hysterectomy, if previous to the operation the fascial diaphragm is uninjured and the cervix is in normal position.

Operative Treatment of Hip Disease.—Rogers and Peabody (*Journal of Orthopedic Surgery,* November, 1920), in considering the treatment of hip disease of long standing, have come to the following conclusions:

The best result in such a destructive process as tuberculosis is firm ankylosis, and in order to prevent the recurrence of symptoms in adult life, this should be the aim of treatment. The correction of deformity by means of osteotomy below the joint should not be done in cases where there is an unstable joint, on account of recurrence of the deformity and on account of continued symptoms. When there is motion in the joint, which is evidently the cause of symptoms, the deformity should be corrected within the hip joint and arthrodesis performed for stability of the joint.

Operations on the Gallbladder and Ducts.—Edgar R. McGuire (*Surgery, Gynecology and Obstetrics,* December, 1920), in a study of 250 operations on the gallbladder states that:

1. All gallstones have their origin in a primary cholecystitis.

2. Typhoid bacilli is present in only seven to ten per cent.

3. The mode of transmission of the primary infection is not positively determined. I am of the opinion that it is almost always carried by the blood stream, and rarely, if ever, by direct extension. It is probably more frequently associated with a primary lesion elsewhere in the abdomen.

4. A diseased appendix is frequently present when stones are found in the gallbladder. It is probably the cause of the primary cholecystitis in more instances than is commonly believed.

5. Gallstones are rare in young people. In less than fifteen per cent. was the patient under thirty years, while over sixty per cent. occur between the age of thirty and fifty years.

6. Jaundice has received too much emphasis as a diagnostic symptom. Probably when the primary cholecystitis is present, a goodly proportion have a mild jaundice, but it is slight and usually forgotten. Stones in the gallbladder or the cystic duct produce jaundice, only by pressure on the common duct, or by associated cholecystitis.

7. Attacks of pain in right upper quadrant is most frequent symptom of stones.

8. Cholecystectomy is the operation of choice where there are stones in the gallbladder or cystic duct. It is probably the operation of choice where stones are in the common duct, if one is positive all stones have been removed, because stones in the common duct are so often associated with old contracted gallbladder.

9. The mortality from cholecystectomy is now sufficiently low so that decision for or against the operation should be judged largely by the percentage of ultimate cures.

10. In cancer of pancreas, the mortality is so high that operative procedure is prohibitive. If operation is done, anastomosis between gallbladder and stomach is the one of choice.

Pregnancy Complicated by Influenza.—Samuel A. Durr (*Surgery, Gynecology and Obstetrics,* December, 1920) in a review of an epidemic of influenza and a study of pregnant women affected states that:

1. The maternal mortality was about the same as in the epidemic of 1918-19.

2. The mortality and morbidity, while small in cases of influenza, was much greater in those complicated by bronchopneumonia.

3. The incidence of abortion and of pneumonia is greatly decreased by keeping the patients in bed, from the time the diagnosis is made until recovery is complete.

4. Abortion is caused by toxemia, or insufficient available oxygen in the maternal blood, with physical exertion as a contributory factor.

5. The virulence of the epidemic decreased steadily and markedly.

Treatment of Pyloric and Duodenal Ulcers.—Richard Lewisohn (*Annals of Surgery,* November, 1920), in considering the persistence of pyloric and duodenal ulcers following simple suture of an acute perforation, concludes as follows:

1. Immediate gastroenterostomy in the treatment of perforated pyloric and duodenal ulcers does not increase the mortality.

2. Gastroenterostomy and pyloric exclusion simplifies the postoperative treatment considerably.

3. Simple closure of the perforation will not cause a cure of the ulcer in a considerable number of cases.

4. Gastroenterostomy will guarantee proper drainage of the stomach contents and overcome partial obstruction of the pylorus caused by postoperative adhesions.

5. Closure of the perforation, gastroenterostomy, and pyloric exclusion should be the method of choice in the treatment of perforated pyloric and duodenal ulcers. Simple closure of the perforation should be reserved for only those patients whose general condition is so poor that even a rapidly performed gastroenterostomy would be too much of an operative risk.

Orthopedic Treatment of Burns.—Harrigan and Boorstein (*Annals of Surgery,* November, 1920), from a series of cases of burns treated by orthopedic methods, come to the following conclusions:

1. Contractures of burns can easily be prevented by early orthopedic treatment.

2. By using simple methods, such as tying the limbs in positions to prevent contractures, no deformities develop and early recovery is obtained.

3. Holding the limbs in proper position accelerates the healing of the wounds.

4. Early massage, exercises, and the wearing of braces, aid in obtaining satisfactory positions and proper use of the limbs.

Treatment of Subphrenic Abscess.—Ullman and Levy (*Surgery, Gynecology and Obstetrics,* December, 1920) state that there is only one form of treatment and that is surgical. The posterior routes of approach are now conceded to be better than the anterior. The posterior transpleural method with resection of a rib is the method of choice. The diaphragm is fixed to the intercostal muscles with three or four sutures and incised and the abscess is then drained. By this method we also obtain the advantages of draining a complicating empyema at the same time; the only disadvantage being that it allows entrance of air into the pleural cavity and possibly some infection. The method of Elsberg, which consists in resecting portions of the ninth and tenth ribs in the axillary line, and, after separating the pleura from the diaphragm incising it, is too often accompanied by tears into the pleura. In our case, the tip of the twelfth rib was resected and the abscess was drained without opening into the pleural cavity. When the abscess points to the abdomen, it may be opened in the midline or parallel to the ribs without getting into the peritoneal cavity. In the retroperitoneal abscesses, the lumbar route is employed.

Gunshot Wounds of Spinal Cord.—Sir William Thorburn (*British Journal of Surgery,* October, 1920), from a survey of the collections of specimens at the War Museum in London, concludes that gunshot injury of the spinal cord may be due to:

1. The direct impact of a missile, which may either penetrate it completely or remain embedded in it, and which is liable to be accompanied by fragments of clothing, and especially of bone.

2. The indirect impact of fragments of bone, which again may penetrate completely, may remain embedded, or may recoil toward the positions from which they were dislodged, although such recoil is far less common and less obvious than in fractures of the vertebral bodies as seen in civil life.

3. Contusion by: Foreign bodies which enter the spinal canal but do not penetrate the theca; displaced fragments of bone protruding slightly into the vertebral canal; displacement of the soft parts only, or, rarely, subluxation of the bones; the widely spread divulsive or explosive action of a missile passing by at a high velocity.

In all cases the cord is liable to present mechanical destruction and hemorrhage extending widely beyond the area of apparent injury, and affecting especially the grey matter of the anterior cornua, where it produces long spindle shaped areas of destruction. Such extension of hemorrhage is more widely spread where the missile is of higher velocity.

In the case of direct impact by foreign bodies, septic meningitis will generally ensue, but such meningitis is less common when impact is due only to fragments of displaced bone. It is generally absent in contusions of all forms, and the untorn dura mater is highly resistant to infection.

Meningitis tends strongly to extend upward rather than downward, and is usually continuous, but may spread unobtrusively along the membranes, to blaze up at remote points.

Hemorrhage sufficient to cause serious compression is very rare, but it is usually present in such quantities that, should life be prolonged, it may readily give rise to well defined cicatrices, which will tend to assume the annular and constricting type often found at operation.

Treatment of Craniocerebral Injuries.—Adolph M. Hanson (*Military Surgeon,* January, 1921), from a study of a series of forty-four craniocerebral injuries operated upon, concludes as follows:

1. All head injuries should be considered serious until proved otherwise, by exposing the skull.

2. The first stage of the operation is the dirty stage, and all instruments used about soiled wound and in performing trepanation of the skull should be discarded, wound wiped out with alcohol, and gloves changed

3. The track should be painstakingly cleansed and all foreign bodies removed if possible. Pure ethyl alcohol in the track does not increase edema, and sterilizes the track as effectively as any antiseptic, and leaves no residue.

4. The dura should not be closed leaving a decompression for edema which is always present and an outlet for any possible subsequent infection.

5. Osteoplastic flaps turned down counter to the wound of entrance for removal of a foreign body are justifiable, even though the dura cannot be closed because of edema.

6. Debridement of the skull (simply enlarging the hole in the skull with rongeurs) should be done in frontal or suboccipital regions where the bone is thick, and a small skull defect preferable, unless the injury is over a sinus, when trepanation should always be done so as to completely expose the sinus.

7. In large eggshell fractures of the skull, an effort should be made to cleanse the track in the brain, if any; but bone fragments extradural should not be removed or disturbed, and a conservative debridement of the soft parts performed followed by suture and a small rubber drain, if infected.

Bacteriology of Infected Wounds.—Theodore H. Sweetser (*Annals of Surgery,* January, 1921) states that:

1. Anaerobes are prominent in the early bacteriological picture of wounds, but disappear in a short time. Aerobes become progressively more prominent. The streptococcus has a fairly constant incidence and is very persistent.

2. A combination of Streptococcus hemolyticus and Staphylococcus aureus was the most common of all associations in wounds. That association was particularly frequent in fatal wounds. Streptococcus hemolyticus, Staphylococcus aureus, Bacillus Welchii, Bacillus coli communis, Bacillus proteus, and, to a less extent, Staphylococcus albus, were the bacteria appearing most often in both the fatal and nonfatal cases.

3. The prognosis seems to have been good in cases showing Staphylococcus aureus or other aerobes aside from streptococcus. Here the most interesting point is that an association with Staphylococcus aureus seemed to lower the virulence of infection with anaerobes. Infections with anaerobes showed a high death rate, but a short period of danger to life, unless the anaerobes were associated with streptococcus. Deaths from streptococcus infection were numerous and occurred at least up to the end of the fourth month.

4. Conversely: Cases fatal early usually showed anaerobic infection; those dying late invariably showed streptococcus infection. Most of the early improvements and cures were cases of infection by aerobes other than streptococcus, while the improvements and cures that were tardiest generally showed infection by streptococcus without anaerobes, or by streptococcus and Staphylococcus aureus without anaerobes.

5. Secondary suture of wounds failed in some cases apparently because the interval between the injury and primary surgical treatment had been too long, and in other cases because the secondary suture was attempted too soon.

6. Gas infection was most often found in wounds of heavily muscled parts of the body; fracture of bone was not an essential factor; anaerobes frequently contaminated without infecting wounds.

7. A streptococcus bacteriemia was apparently by far the most important cause of death in cases of gunshot wound.

8. The culture of infected wounds is certainly valuable, even if only for the purpose of determining the presence of Streptococcus hemolyticus.

Proceedings of Societies

NEW YORK NEUROLOGICAL SOCIETY.

Joint Meeting with the Section in Neurology of the New York Academy of Medicine.
Held on November 9, 1920.

The President, Dr. Walter Timme, in the chair.

Psychosis Following Surgical Operation.—Dr. A. L. Soresi presented two patients in both of whom unexpected signs of violent collapse with mental and psychic confusion had followed upon surgical operation. One man, sixty-eight years old, had been operated on for carcinoma of the stomach. The first symptom of the psychosis was extreme cheerfulness, in an otherwise rather stolid, morose individual. He collapsed very rapidly and the prompt administration of strychnine seemed to be the only means of reviving him. The other patient presented had had an appendicitis operation followed by a psychosis. He had been a heavy drinker for many years. The connection between the withholding of liquor in his case and the tea to which the first patient was accustomed may have been a factor in the psychosis, but to what degree is unknown. Strychnine was used.

Dr. E. B. Craig and Dr. H. A. Riley examined the patients at the meeting and reported a generalized tremor of the lips and tongue, fibrosis of the peripheral arteries, and diminished blood pressure in the first patient. The second patient showed sluggish pupils and reflexes were elicited with difficulty. In answer to Dr. Joshua H. Leiner's inquiry as to whether the routine examination of the blood pressure had been made before operation to determine whether a possible toxic factor might have been present that showed adrenal involvement, Doctor Soresi replied that the leucocyte count made after the operations, in addition to the routine examination, showed no infection, with the natural exception of the appendicitis case. All the patients in whom this psychosis occurred had normal pulse and temperature yet they appeared to be dying. No organic condition could be found to account for the psychosis. The strychnine was administered as an emergency stimulant in view of the extreme collapse, and the absence of toxic signs. Its use had been effective in all the cases.

Poliomyelitis.—Dr. Isadore Abrahamson said that he wished to call attention to the existence of an epidemic which bade fair to throw considerable light on a series of infectious diseases related to one another. He discussed the difficulties of differential diagnosis that early investigators experienced; the similarities in pathological anatomy; the results of animal experiments here and abroad; the discovery of the organism by Loewy and Strauss and the failure of Flexner and Amoss and others to corroborate their findings. He then discussed in brief the variations of the clinical syndromes during the epidemic. The epidemic died out and for a time only chronic or remitting cases were seen. Then came warnings of poliomyelitis; it appeared in Boston in epidemic form, then cases appeared in New York City. The Board of Health reports ninety-three cases, the maximum number in October. But while a clear cut poliomyelitis syndrome could be seen, the cases were more numerous than was easily credible of a disease which established conclusively in a clinical way the missing link between lethargic encephalitis and poliomyelitis, though the early and marked palsies would rather place them in the latter category. There were a number of mild cases consisting of a catarrhal inflammation of the nose and throat, with fever, general malaise, and an involvement of the facial muscles with or without diplopia.

Dr. Abrahamson presented brief reports of several of the severe cases that came under his observation.

He said that he had been in communication with Doctor Zingher, of the Health Department, who had studied the spinal fluids in the reported cases of poliomyelitis of this epidemic and he had found that the vast majority showed a great excess of lymphocytes, excess of globulin, and Fehling reduction. Of special interest in his cases and in those of other physicians of whom he inquired, was the fact that almost all had at the outset a catarrhal inflammation of the nose or throat, and few gastrointestinal signs. The same peculiarity was noted in lethargic encephalitis and influenzal encephalitis.

Dr. M. Neustaedter, in discussing Doctor Abrahamson's paper, said that the cell count, globulin and albumin content of the spinal fluid alone without the clinical findings were no index of any particular disease. In any inflammatory condition of the meninges, irrespective of the etiological factor, alterations in the spinal fluid in its cytology, as well as its chemistry, were found. So far as his experience went, and the literature on poliomyelitis was concerned, there seemed to be a universal opinion that early in poliomyelitis there was a marked lymphocytosis and later in the course polymorphonuclears predominated. Reports of other investigators showed that with the Lange test about forty-five per cent. of cases of poliomyelitis gave the luetic curve. In his work on complement fixation of spinal fluids with poliomyelitis antigen he had some very gratifying results in poliomyelitis and recently also in lethargic encephalitis. It seemed worth while that this specific complement fixation test should be tried more extensively and in it we might have a specific reaction pointing more definitely to the etiology of the two diseases. He had conducted neutralization tests with poliomyelitis virus and serum of recovered lethargic encephalitis patients since March last. This work had not yet been reported. The results showed that there was a close point of contact between poliomyelitis and lethargic encephalitis.

Dr. E. Altman said that the epidemic had reached the lower East Side as well as the Washington Heights region where Doctor Abrahamson had studied it. He stated that he had a child about two years of age in his service at the Beth Israel Hos pital that showed a hemiplegia. The leg and arm recovered rapidly, but the face remained paralyzed when the child was discharged after a three weeks' stay in the hospital.

Dr. David J. Kaliski said that he was not convinced of the value of the complement fixation test for poliomyelitis using the antigen perfected by Doctor Neustaedter. Most of the sera sent by Doctor Neustaedter were negative, while a few of the controls, most of them old specific cases or other neurological conditions, and not poliomyelitis, gave fixation with the antigen. Thus the question of the specificity of the antigen was brought up for consideration. Using the organisms of encephalitis lethargica isolated by Loewe and Strauss as antigen in a complement fixation test for this disease, he had not been able to decide definitely the value of the reaction principally because of a falling off in the cases of the disease when he was ready to study this phase of the problem. However, the work was proceeding and would be reported later on.

Dr. Kaliski stated that there were no definite diagnostic criteria in the cerebrospinal fluid which would serve to distinguish absolutely poliomyelitis, encephalitis lethargica, and the polioencephalitis types. While there was likely to be a larger number of cells in the fluid in the former condition, with an increased globulin reaction, and even a faint opalescence of the fluid due to a very large number of cells in the fluid, this was not diagnostic, but merely suggestive of the former diagnosis. Hemorrhage and even xanthochromia had been seen in a few cases of encephalitis lethargica. The curves obtained with the colloidal gold test were not characteristic for poliomyelitis. Most of the fluid showed slight and surely not characteristic and constant changes from the normal. A rare case had been reported as showing a curve similar to that characteristic of paralytic dementia or syphilis, but he had not been able to confirm this as yet in any of his cases. In encephalitis likewise no characteristic or constant deviations from the normal were found. In a few cases of superior poliomyeloencephalitis no changes whatsoever with the colloidal gold test were found while the lymphocytes were usually only moderately increased, rarely above fifty to one hundred cells to the millimetre.

Conditions like poliomyelitis, encephalitis, poliomyeloencephalitis and tuberculous meningitis frequently gave similar findings in the fluid as regards the cells, the globulin, and the presence of sugar reducing substances, and the deviations were usually in degree only. Of course, in the latter condition (tuberculous meningitis) the finding of tubercle bacilli cleared up the diagnosis. From the viewpoint of the pathologist the diagnosis of any of these conditions with certainty was impossible, with the exception of tuberculous meningitis.

Dr. J. H. Leiner spoke of four cases he had seen recently at the Lebanon Hospital on the service of Dr. William Leszynsky. In three of these patients there were facial palsy and meningeal irritation that later proved to be of poliomyelitic origin. One child was somnolent, had no Babinski or Kernig sign, knee jerks were absent; the patient died within forty-eight hours. One child with facial involvement gave a history of vomiting and gastrointestinal disturbance three or four days before coming to the clinic. The illness then assumed a poliomyelitic character.

Dr. Abrahamson, in closing the discussion, expressed the hope that by calling attention to the current epidemic, the symptoms and signs of which seemed to fall between the known varieties of poliomyelitis and encephalitis, new data might be collected from observers and the relationship between influenza, lethargic encephalitis and poliomyelitis be established.

Pupil Dilatation and the Sensory Pathways.—Dr. Joseph Byrne considered the mechanism of pupil dilatation as set down in the text books unsatisfactory from the physiological viewpoint and misleading to the clinician. Experimenting with cats, Dr. Byrne found that after section of any considerable portion of the afferent pathways pupil inequality ensued. Thus after section of one sciatic nerve or of the lumbosacral nerve roots, the contralateral was smaller than homolateral pupil, whereas after section of the brachial plexus, or of any of the cervical nerve roots, as well as after hemitransection of the spinal cord in the upper or lower cervical region, or in the lower thoracic or upper lumbar region, the homolateral was the smaller of the two pupils. Following any one of the lesions enumerated, after the lapse of a more or less well defined period of incubation, e. g., from eight to twelve days after section of one sciatic nerve, intravenous injections of adrenalin caused the relatively constricted pupil to become, for a time, larger than its fellow. This phenomenon was know as paradoxical pupil dilatation and Doctor Byrne's experiments were the first in which paradoxical effects had been observed after lesions of the afferent pathways, all previous observations having been made after lesions of the afferent pathways, e. g., of the cervical sympathetic.

Beside anatomical section, Dr. Byrne made injections of alcoholic solutions into the sciatic nerve and into the nerve trunks of the brachial plexus. The results corresponded closely with those obtained after anatomical section. From the effects of complete cord transection at various levels above and below the upper thoracic region (inferior ciliospinal centre of Budge) upon the pupillary phenomena noted after section of the afferent paths, it was concluded that in the normal waking state afferent impulses from all parts of the periphery were constantly impinging on the cells of the lateral grey column in the upper thoracic region on both sides. These impulses determined the efferent flow along the cervical sympathetic nerve which kept the pupil dilated. There was, however, another factor in pupil dilatation which depended upon inhibition of the sphincter muscle. But this formed the subject of a separate study.

Dr. Byrne's experiments give no support to the existence of a hypothetical cerebrospinal dilator pathway running, as set down in the text books, from the region of the pons to the lower ciliospinal centre. In no instance had Dr. Byrne been able to obtain effects upon the pupil after hemitransection of the cord in the cervical region which could not as readily be obtained after posterior nerve root section.

However, in hemitransections of the cord made about the level of the second cervical root, marked homolateral pupil constriction was encountered. This, in Dr. Byrne's opinion, was in part the result of injury of the root pathways of the fifth cranial nerve and not the effect of lesion of any special cerebrospinal dilator pathway. In conclusion Dr. Byrne remarked that his experiments opened the way for a more exact interpretation of pupil inequality as encountered clinically, whereas they brought into question the value of the socalled Klumpke-Déjérine sign which was usually interpreted to mean injury of the efferent cervical sympathetic pathways.

A Study of Motor Aphasia of the Cortical or Mixed Type.—Dr. Samuel Brock gave the history of an American railroad mechanic, forty years of age. He had used alcohol to excess formerly with frequent intoxication. Cigarettes were also used to excess, but no drugs. The family history was unimportant, there was no history of head injury at any time, venereal infection was denied. While in France in service with the Canadian army some two and a half years ago, the patient suddenly pitched forward unconscious. On recovering, his speech was affected and his right arm and right face paralyzed. Practically complete recovery in the face and arm had occurred, but the speech defect had improved very little. Since the onset of this trouble he had had seizures of a Jacksonian type, beginning in the right face, then involving the right arm and leg. Neuropsychiatric examination revealed a motor aphasia; the gesticulations, mimicry and slight irascibility seen in this type of speech difficulty were manifest. Stereotyped phrases were used. He was able to count up to seven and to enunciate the first two letters of the alphabet. When asked to write down his age he wrote 1881, the year of his birth. His replies were not the exact answer to the question asked, but closely related to it; "when" seemed to be mistaken for "where." He was able to write down few words from dictation, and could not write simple sentences, or numbers of more than four figures. He appreciated his inability, and noticed his mistakes. He was able to write his name. Copying printed or written words was done quite well. Reading printed or written words was accomplished slowly but correctly. He recognized all objects, and gave no evidence of being apractic.

There was no gross impairment of motor power. No Babinski or allied reflexes were elicited. They were all exaggerated and equal on both sides, except that the right Achilles was slightly more active than the left, and at times the right knee jerk predominated. In the sensory sphere: an area of hypo to anesthesia to light touch was noted, together with analgesia on the anterior and posterior portion of the right chest and adjacent neck, going down to the level of the abdomen. There was no ataxia or adiadochocinesis, no Gordon-Holmes phenomenon. A tremor of both hands was present. All other examinations, with the exception of the spinal fluid which was not examined, were negative.

The patient had suffered from dyspnea on exertion, cardiac palpitation and precordial pain. This evidence of cardiovascular disturbance and the sudden onset postulated a vascular accident in a branch of the left middle cerebral artery supplying the posterior part of the left inferior frontal convolution and adjacent motor area. The residuum was considered to be either a cyst or an old area of softening. An operation was proposed with the understanding that while but a small chance of improving his condition existed still there was a possibility.

Dr. K. Winfield Ney described the operation and findings. Operation was indicated because of evidence of cortical irritation with typical Jacksonian seizures. The patient was not encouraged as to results. He operated as follows:

Under local anesthesia, a large flap was turned down in the left parietal region. About seven centimetres above the external auditory meatus a large cyst was found. Vessels were ligated around the cyst. During the ligation there was an escape of a large amount of fluid from the cyst, after which it collapsed, leaving a cavity about two cm. wide and one cm. deep. The thin upper wall of the cyst was resected, leaving a cavity which had the characteristic yellow appearance of degenerative brain tissue. The lesion had been located accurately.

About a year ago seventy or more craniotomies done under local anesthesia were reported before the society by Dr. Ney, and since that time he had added about twenty-five more. He stated that he was becoming more and more confident of the value of this procedure. The majority of neurologists were somewhat skeptical in regard to intracranial operations because of the high mortality. In these series of operations under local anesthesia there had been no operative deaths. The local anesthesia had never had to be supplemented by a general anesthetic, nor had it been necessary to discontinue any operation because of pain, shock, or any of those disturbing factors which were experienced under general anesthesia. Blood pressure is seldom changed throughout the operation. There was no pain in going through the bone and cutting of the dura was not noticed, provided it was not pulled or too greatly traumatized. The vascular instability associated with many brain operations, such as edema, had not been a complication following invasions under local anesthesia. The infiltration of the tissues gave an almost bloodless scalp incision which was also helpful in the elimination of shock. The prospects of intracranial surgery under this form of anesthesia, Dr. Ney felt, were most encouraging.

Doctor Brock, in closing the discussion, said that the patient was no better. The Jacksonian seizures were just as frequent as before, the aphasia was the same. There was no nystagmus before or after operation. The findings in this case bore out older studies on aphasia. A cortical lesion at the entering and leaving pathways, causes a mixed aphasia, which was of distinct value from a localizing viewpoint.

Progressive Lipodystrophy. — Dr. Kraus showed a second patient, a young woman suffering from progressive lipodystrophy. Not more than twenty-five such cases had been reported in the literature. At the age of eight it was noticed that the fat about her face began to disappear and the hips grow heavier. The disease progressed for fourteen years, and there was a marked atrophy of the subcutaneous fat down as far as the first lumbar segment, with fatty deposits below that point. There was a condition of the legs which appeared to be edema, but did not pit on pressure.

Examination showed nothing else of consequence. Doctor Kraus suggested that this condition was analogous to the trophedema of Meige. Pathological examinations in progressive lipodystrophy showed that there was a subcutaneous accumulation of fat and a proliferation of connective tissue. The same thing applied to trophedema, except that the accumulation might involve both legs only, one leg or only one side of the body. It would appear that in typical progressive lipodystrophy there existed in the lower extremities a condition of trophedema upon which was superimposed a further disorder of the subcutaneous tissues manifested as a localized multiple lipomatosis. In the October, 1919, issue of the *Revue neurologique,* there appeared a critical study of progressive lipodystrophy by Boissonas. This author concluded that the cause was not known, but it was thought that a spinal cord origin was most probable.

◆

Letters to the Editors.

FUMIGATION TREATMENT OF SYPHILIS.

New York, *March 2, 1921.*

To the Editor:

In the New York Medical Journal of January 29, 1921, p. 183, appears an article by Joseph P. Burns, entitled Fumigation Inhalation Treatment of Syphilis, which has stimulated my curiosity to a point that demands more information than the author imparts. Dr. Burns's article is largely an encomium on a substance called spirocide, which appears to possess startling virtues. If only a moiety of its beneficent properties exist, I should welcome this substance enthusiastically, as what syphilographer would not? Before welcoming it, however, any syphilographer will be forgiven a desire for scrutiny. With the best of intentions one approaches all therapeutic assertions with scepticism until personal experience, or the statement of accredited authorities, dispel doubt. Altruism radiates from Dr. Burns's words: "Any method that will control or limit the ravages of venereal disease, or anything that will aid us in the present mode of treatment thereof, should be welcomed by all interested, and any knowledge, therefore, that will benefit suffering humanity, should be of especial concern to the medical profession." Who would deny this? But the medical profession, rendered suspicious by the frequent cry of "Wolf," has adopted rigorous standards of appraising what will "benefit suffering humanity," and before embracing a new suggestion wants to be sure whether humanity will suffer less because of it, or perhaps more. Dr. Burns continues: "The disease requires skillful treatment, and if this is lacking its manifestations recur until death." This is true. The question that automatically arises is, Is the treatment advocated in Dr. Burns's article skillful? The information I desire is, first, does spirocide benefit suffering humanity more, or even as much as the medicaments created by the ingenuity of scientists during the last decade do, and, second, can its use be regarded as skillful?

Dr. Burns's answer to this is, "The results have been most gratifying." They may have been, but the reply is vague. To render it more exact, the following questions might be answered:

1. Does spirocide cause manifest lesions to involute more rapidly than other treatment?

2. Do the lesions tend to recur less frequently than after other treatment?

3. Does it cure cases refractory to other treatment?

4. Does the Wassermann reaction disappear more rapidly than after other treatment?

5. Does the Wassermann reaction stay away when gone?

6. Why did not the Army adopt this method of treatment after the experiences reported by Dr. Burns from General Hospital No. 5, Fort Ontario, Oswego, N. Y.?

A valid reply to these questions would naturally depend upon the use of spirocide in hundreds of thousands of cases by scores of observers, a test in fact similar to that applied to arsphenamine for more than ten years. But Dr. Burns bases his views upon a hundred cases treated at General Hospital No. 5, and reports eleven. [Dr. Burns reported many more cases in his report, but these were omitted due to lack of space in the Journal.—Editors.] His period of study, as indicated in the first paragraph of this report, was four months.

In anticipation of a possible reply by Dr. Burns, or perhaps someone else conversant with the use of spirocide, I should like to amplify some further details involved in the above six questions.

1. Does spirocide cause manifest lesions to involute more rapidly than other treatment? In Case I of Dr. Burns's series the chancre was healed in twelve days, the mucous lesions in twenty-one. This seems anomalous, since mucous patches respond more rapidly to suitable medication than do primary lesions in general, and two injections of arsphenamine, or three of mercury, at two day intervals, will cause the average mucous patch to disappear within from five to ten days after the first injection. By healing of the chancre does Dr. Burns mean its epithelialization, or the total disappearance of the infiltration? Only the latter can be regarded as healing. In Cases II and III no mention is made of the time required for involution. How long did it take for the leg ulcer in Case IV to heal? (The first Case IV, Pvt. E. P. A., not the second Case IV, Pvt. L. M. C.) But we have not the space to analyze all of the cases.

By the combined mercury and arsphenamine treatment in vogue, the chancre will disappear in two or three weeks at the outside, mucous patches in from five to ten days, a roseola within a week, large papules in one to three weeks, accuminate papules in from two to six weeks (they are very obstinate), gummata in about two weeks, etc. Of course in the Army very few tertiary lesions were seen. Mostly there were early cases, although Dr.

Burns curiously enough in Cases VII and VIII talks of late cases. Case VII was only of ten months' duration, Case VIII of five months. Syphilographers, perhaps mistakenly and because of tradition, would term them early.

2. Do the lesions tend to recur less frequently than after other treatment? Dr. Burns could scarcely be expected to answer this question on the basis of four months' observation.

3. Does it cure cases refractory to other treatment? There is no allusion to this question, except that his hundred cases, compared "with 250 similar cases treated by standard methods," indicated that "fumigation inhalations have been decidedly more efficacious." This is scarcely the same thing, but precisely how was the treatment more efficacious? Elsewhere he says the therapy he advocates "surpasses expectation." How did it? Twenty-seven days to cure mucous patches, Case I; twenty-one days to start involution in the maculopapular eruption, Case VI, are both fairly slow. What would happen in late refractory cases if this is the maximum to be expected in early ones?

4. Does the Wassermann reaction disappear more rapidly than after other treatment? In early syphilis, and Dr. Burns deals with no other type, the Wassermann reaction at times disappears after what seems very trifling treatment, only to return later. I have seen it vanish after twelve days following the first treatment, and return within four months. In one of Dr. Burns's cases it went within ten days, but as a rule in secondary syphilis, properly treated, it disappears within three months and stays away. In latent syphilis it is often difficult to eliminate the reaction. There is nothing striking in Dr. Burns's report as to the rapidity of conversion of the reaction. What spirocide would do in latent syphilis, the doctor could not possibly answer after only four months of observation, or even after two years, which was as long as the Army existed. And, our Army had a relatively small number of latent cases. The draft age precluded this. Thus this very important criterion of the value of spirocide cannot be supplied from military statistics.

5. Does the Wassermann reaction stay away when gone? In four months of observation it would be unfair to expect a sound answer to this question.

6. Why did not the Army adopt this method of treatment after the experiences reported by Dr. Burns from General Hospital No. 5, Fort Ontario, Oswego, N. Y.? Arsphenamine and mercury as compared with spirocide are expensive. Their administration requires skill. As Dr. Burns points out, it requires "intricate equipment, sterile needles, sterile solutions, nurses in spotless uniform, and what not" (whatever "what not" may be). The Army was looking for short cuts, and it is surprising that the Surgeon General did not abandon the rules laid down in the Manual on Venereal Diseases for the simpler spirocide treatment, if the justification for so doing was as great as Dr. Burns's article indicates. I, as a syphilographer thirsting for information, could well wish that the Surgeon General might publish his motives for having made me continue to inject arsphenamine and mercury while I was in charge of the syphilis and skin service at the Walter Reed Hospital from January to June, 1919, instead of issuing orders to me to use spirocide, which my ward master could have administered for me. I have heard, however, of no abrogation of the Manual, and I believe that Colonel Thomason's statement is quite clear: "The Surgeon General does not approve of its purchase yet." The treatment outlined in the Manual could not have been entirely inefficacious for Dr. Burns, in talking about our conscripts as "physically unfit, as they were physical and moral cowards," admits that thousands of them "were returned to health through association with real men." Just association could not have done this. There must at least have been something good in the treatment they received, and, so far as syphilis is concerned, this was the treatment exacted in the Manual, unless the latter was suspended for some reason in a special organization.

There are a few further remarks in the body of Dr. Burns's article which are not entirely patent to me. How does mercury make venereal warts vanish? They are not syphilitic. Dr. Burns talks of "the rash or secondary lesions" disappearing in "five or six days." Does this mean after the first inhalation, or after a complete series? Precisely what is the individual effect of the various ingredients in spirocide? Dr. Burns may be quoted as stating "the unvarying results with the fumigation inhalation of mercury in all stages of syphilis surpassed expectation," etc. How did it surpass expectation? If he studied the results in all stages of syphilis, it is to be hoped that he will not withhold his observations. In the article in question he discusses only the secondary stage. Precisely how do present methods of treatment "incapacitate the patient for his work," and who has seen the alleged "dreaded consequences, sudden collapse, or even the death of a patient"? So far as my own experience goes, I have seen neither, and among my colleagues, those stigmatized by Dr. Burns as "specialists," I have heard of practically none of these things in five years. In the earlier days there were many reactions to arsphenamine, and a few deaths, but this is ancient history, and patients go from clinics and private offices to their work after treatment, obviously without dying or even collapsing.

In the interests of suffering humanity, which Dr. Burns no more ardently desires to serve than scores of specialists with intricate equipment, it is hoped that your JOURNAL will endeavor to supply further facts about spirocide, or let Dr. Burns himself do so in a reply that will undoubtedly be a sincere attempt to make a scientific contribution to the literature of the management of syphilis.

WALTER JAMES HIGHMAN.

780 MADISON AVENUE.

The States and Mental Defectives.—Delaware is the latest State to take action against the perils that result from neglecting the complications that mental diseases introduce into the problems of delinquency, crime, dependency, and other social ills, and is taking steps looking to the cure and to the prevention of these diseases. The legislature has appropriated $60,000 for improving the care and treatment of the mental patients in the State Hospital at Farnhurst.

NEW YORK MEDICAL JOURNAL

INCORPORATING THE

Philadelphia Medical Journal
and the Medical News

A Semimonthly Review of Medicine and Surgery.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, APRIL 20, 1921.

Collectanea

Special Measures Against the Introduction of Typhus.—In view of the increasing number of vessels arriving at ports of the United States during the last six months with typhus infection on board, the Secretary of the Treasury, on January 19th, invited the attention of the State Department to the situation in Europe with respect to the prevalence of typhus and the action taken by the Public Health Service in the assignment of medical officers to the various American consulates for the purpose of supervising preventive measures applicable to ships and personnel departing for ports of the United States, says *Public Health Reports* for February 25, 1921. In pursuance of a specific request of the Secretary of the Treasury, the various consular officials in Europe were instructed that bills of health should be withheld unless the requirements of the United States quarantine regulations covering measures to be undertaken for the prevention of the spread of typhus be observed, the latter to include appropriate disinfestation of all travelers to the satisfaction of the medical officer attached to the consulate. In support of this action quarantine officers at ports of the United States were directed, if any vessel carrying passengers arrived from European ports without American consular bill of health appropriately countersigned by a medical officer of the Public Health Service, where such officers were on duty, that the delousing of arriving passengers should be enforced at quarantine stations and the personnel held in detention for the completion of twelve days after delousing is completed. The United States Quarantine Regulations contain the provision, automatically applicable, that any vessel arriving with a history of typhus en route, or detected at the time of examination, shall be held in detention for the completion of twelve days.

The Delusion of Witchcraft.—It might easily be supposed that such a thing as witchcraft could not occur today, but we are living in a tense, nervous condition, which makes us see

Stones in sermons,
Crooks in printed books,
And harm in everything.

Reformers are swarming; they will break laws themselves in order to capture those who in their opinion are breaking laws. We are now suffering from a surfeit of legislation and supervision, and everyone has something to tell of his neighbor. A single case of anything unusual quoted in the papers sets imagination alert, and similar cases swarm and will continue to increase.

Just now we are bewitched. The "evil eye" is on us. It seems incredible, but think from how small a beginning the epidemic began in 1692 in Salem, Mass.:

A pastor had a little daughter of nine, a niece of eleven, and a half Indian, half negro servant, Tituba. Four other young girls used to join in their games. Tituba used to practise tricks and incantations common among the natives at her home just to amuse the children, who learned to do all kinds of weird things and scared their puritan parents. A Dr. Griggs, being consulted privately, said they were bewitched. This became known, so, naturally, the children showed off more and enjoyed the popularity, but under threats they confessed that Tituba and two harmless old women had really bewitched them. In four months 250 people were in jail; nineteen were hanged, two died in prison, one was tortured to death, all because a group of little girls were rather hysterical, good mimics, not very truthful, and enjoyed scaring folks.

In an English law court during the war alienists had to point out to the jury that a belief in witchcraft may be a sane belief, but coexisting persecutory delusions insane. A man in the British Navy said another negro on board was jealous and put crum or ju-ju on him by poisoning his comb. Using the comb made his skin shake, his bowels fail to act, and his body to stink. He believed he would die through having used the comb. Later, he developed persecution mania and attempted the lives of four shipmates, so was put in an asylum as dangerous because of his delusion of persecution.

Today, doctors are not in favor of bewitchment, but mothers in New York are gravely asserting their children have had the "evil eye" cast on them. A baby dies after the supposed witch has looked at it, a sixteen year old girl is under the control of her friend, a girl of seventeen, and the mother brings the case into court. The cases will increase until the public hunger for the sensational is satisfied. The idea will find good soil among the swarming alien population, particularly the Irish. The writer recalls a sane and severe Scotch minister who, on being invited to the night nursery to see his sleeping godchild, said he would deem it an impertinence, if not dangerous, to look at her while she slept. And that was in 1918.

If adequate common sense and psychotherapy were not at hand to combat this modern outbreak, we should have harmless old women dragged off to jail and an excited mob swarming to a witch burning.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 13. NEW YORK, WEDNESDAY, MAY 4, 1921. WHOLE No. 2208.

The Rôle of the Prostate and Seminal Vesicles in Arthritis*

With a Discussion of Surgical and Nonsurgical Treatment

By OSWALD SWINNEY LOWSLEY, A.B., M.D., F.A.C.S.,
New York.

ARTHRITIS.

The subject of arthritis is an exceedingly interesting one. In recent years interest has been revived by the excellent work done on focal infections. Teeth, tonsils and sinuses have received a considerable amount of attention by numerous authors. It is the purpose of this communication to call attention to the prostate gland and seminal vesicles as sites of focal infection.

This report is based on a study of one hundred cases of gonococcus infection of the joints, occurring in Bellevue Hospital in the past two years, additional cases which have been treated by operation and otherwise during the past six months, and some cases which have been treated by palliative means. The investigation was conducted largely in the urological department of Bellevue Hospital, and I wish to express my thanks to Dr. E. L. Keyes, Jr., for his cooperation and advice in the conduct of this research.

John H. Cunningham, Jr., of Boston, has written extensively on the subject of operative interference in cases of socalled gonorrheal rheumatism. Great credit should be given to Dr. Eugene Fuller, of New York, for persistently calling the attention of the medical profession to the part played by the seminal vesicles in this affection. Schmidt, Young, E. O. Smith, White, Stanley and others have also written on this subject.

Llewellys F. Barker (1) states as follows: "We should also, when using the term infectious, keep clearly in mind the difference between, a, an infection in a joint system itself, and, b, an infection somewhere in the organism as a whole, with secondary noninfectious changes (toxic, nutritive, trophic) in a joint system. I emphasize this point because of the great importance, in the chronic arthropathies, of minute foci of infection distant from the joints, and of their removal as a therapeutic measure. Chronic inflammations of the paranasal sinuses (including the antrum of Highmore), chronic tonsillitis, chronic otitis media, pyorrhea alveolaris, alveolar abscess, chronic bronchitis, chronic ulcerative enteritis, chronic appendicitis, cholecystitis, chronic pyelitis, chronic cystitis, chronic urethritis, spermatocystitis and prostatitis, chronic salpingitis and chronic endometritis may be mentioned among the many possible foci whence influence injurious to the joint system may emanate, and this without prejudice as to whether these influences are, 1, metastatic infection; 2, toxic; 3, neurotrophic, or, 4, noxious in all other ways."

On account of the intimate anatomical association of the prostate and seminal vesicles, it is necessary to consider them together in discussing arthritis in its relationship to infections of the genitourinary tract.

A study has been made of cases of arthritis discharged from Bellevue Hospital with a diagnosis of gonococcus infection of the joints. These patients have all been treated rather recently. All were in the hospital between August, 1917, and June, 1919. Eleven of these cases occurred among women; all of the rest were men. In age the patients varied from seventeen years to fifty-one years, the average age for all patients being twenty-nine and a third years.

The cases occurred on all of the four divisions of the hospital, and in all services, so that the treatment, to be mentioned later, is a fairly composite picture of what is actually being done for such patients in Bellevue Hospital. The majority of the patients, sixty-seven in number, were treated in the urological wards. Twenty-five were treated in medical wards, six in surgical wards, and two in the gynecological department.

Bellevue Hospital is more or less of a clearing house for the other city hospitals, and the question of keeping cases of arthritis instead of shipping them to hospitals on Blackwell's Island depends considerably upon the interest the house officers have in such cases. Therefore, there is a great difference in the length of time spent in Bellevue by arthritis patients. The shortest time spent was one day, the longest seventy-six days, and the average for one hundred cases thirteen and six tenths days. Thirty-one patients only were in the hospital more than two

---

*From the Urological Department, Bellevue Hospital.

Copyright, 1921, by A. R. Elliott Publishing Company.

weeks, while fourteen were in over a month, and three over two months.

TABLE I

SUMMARY OF ONE HUNDRED CASES OF GONOCOCCUS INFECTION OF JOINTS TREATED IN BELLEVUE HOSPITAL BETWEEN AUGUST, 1917, AND JUNE, 1919

Age	17 years to 51 years—average 29 1/3 years
Length of stay in hospital	1 day to 76 days—average 13.6 days
Duration of disease, previous to admission	2 days to 2190 days—average 94 1/3 days
Stage of disease	Acute in 22 per cent.—subacute 15 per cent.—chronic 30 per cent.—not stated in 33 percent.
Cause of condition as stated by patient	Gonorrhea 33 per cent.—exposure to cold, traumatism or alcohol in 12 per cent.—no cause ascribed in 55 per cent.
Previous similar attacks	In 15 per cent. of cases, 66 per cent. admitted previous gonorrhea, 29 per cent. denied previous arthritis or gonorrhea
Joints affected	Knee, 53—ankle, 44—wrist, 30—feet, 26—hips, 18—shoulders, 14—hands, 14—elbows, 11—spinal column, 8—heels, 9—sterno-clavicular, 7—cervical vertebrae, 3—fingers, 2—sacro iliac, 2—jaw, 2—thumb, 1—sternocostal, 1
Temperature on admission	Normal in 20 cases—elevated above 100 in 78
Lungs	Impaired in 11 cases—unimpared in 86
Teeth	Bad condition in 31 cases
Tonsils	Pathological in 10 cases
Urethral discharge	34 cases—17 of which showed gonococci—4 cases had epididymitis
Treatment	Rest in bed, 97 per cent.—cast, 22 per cent.—baking, 15 per cent.—Oil of Wintergreen dressing, 11 per cent.—bandages, 6 per cent.—vaccines, 27 cases—10, gonococcus—15, typhoid—2, both—chill in 9 cases—fever in 18 cases—neither chill or fever in 9 cases
Results from vaccines given	17 cases showed marked improvement—10 cases did not show marked improvement
General Results of all treatment	33 per cent. of the cases were relieved of pain to a great degree—17 per cent. experienced no relief—indefinite, 50 per cent.

The duration of the illness, as stated by the patient upon admission to the hospital, varied from two days to 2,190 days, the average in the entire one hundred cases being ninety-four and a third days. Twenty-five patients had had arthritis for less than one week upon admission, sixteen two weeks or less, eleven three weeks, ten one month, seven for two months, four for three months, two for four months, one for five months, two for six months, one for seven months, one for one and a half years, one for two years, one for four years, and one for six years.

The condition was stated to be acute in twenty-two per cent. of the cases, subacute in fifteen per cent., chronic in thirty per cent., and no mention made in thirty-three per cent.

The patients' opinion as to what caused the condition proved to be a recent or remote attack of gonorrheal urethritis in thirty-three per cent. of the cases; twelve per cent. of the patients ascribed their condition to exposure to traumatism, cold, or indulgence in alcoholic beverages. Fifty-five per cent. of the patients did not have the slightest idea as to the cause of the condition.

The season of the year does not seem to have any particular bearing on the occurrence of the disease in this series, except that there were not so many cases in the hot summer months as the others. The greatest number occurred in May and November. Second on the list are January and December; June and September follow. February comes next on the list. The least number of cases occur in October, July and August. The complete list follows:

Per Cent.	*Month*	*Per Cent.*	*Month*
10	January	10	April
7	February	11	May
9	March	8	June
5	July	6	October
4	August	11	November
8	September	9	December

Previous similar attacks had occurred in fifteen per cent. of the cases, while sixty-six per cent. of the patients complained of a previous gonorrhea. Twenty-nine per cent. denied previous attacks of either arthritis or gonorrhea.

JOINTS AFFECTED.

The knee was involved more frequently than any other joint in this series. Fifty-three cases had one or both knees affected, twenty-eight had both knees enlarged, fourteen had the right only and eleven the left only.

The ankles come next in order of frequency, forty-four cases in all being recorded; twenty-six of these had an involvement of both ankles, ten on the right side only and eight on the left.

Thirty cases of wrist involvement appear, fourteen with both wrists affected, nine on the right side only, six on the left, and one not stated.

The feet were affected in twenty-six cases, although the records are not invariably clear in separating the foot cases from the ankles, seventeen cases had both feet involved, four the right foot only, and five the left foot only.

Eighteen cases had hips affected, in nine of which both hips took part, in four the right only was involved, and in five the left.

The shoulders were the site of lesions in fourteen cases, six of which had both sides affected, four on the right side only and four on the left.

The hands were affected in fourteen cases also, three of which were bilateral, five the right side only, and six the left.

The elbows took part in the picture in eleven cases, seven of which were bilateral, one on the right and one on the left. In two cases it was not stated which side was affected.

The heels were affected in nine cases, six having an involvement of both sides, two on the right only, one on the left only.

The spinal column (back) was complained of in eight cases, the legs and thighs in the same number.

The sternoclavicular joint was affected in seven cases, arms (muscles) in four, in one of which both were involved. An occurrence of arthritis of the cervical vertebræ occurred in three cases, fingers in two, sacroiliac in two, jaw in two, thumb in one, and sternocostal in one.

The temperature of the patients upon admission to the hospital was within normal limits in twenty-two cases, and elevated above 100° in seventy-eight. The average of all cases was 99.9°. The highest temperature was 103°. Eighteen patients had a temperature of 101° or over.

The teeth were recorded as being poor in thirty-one cases, good or negative in twenty-nine cases, and not mentioned in forty. Tonsils were large or congested in ten cases, negative in twenty-six, not mentioned in sixty-four.

The lungs were impaired in eleven cases, unimpaired in eighty-six, and no report in three. The impairment noted was in most instances râles, one

TABLE II.

SURGICAL CASES DURING PAST SIX MONTHS

No.	*Name*	*Age*	*Diagnosis*	*Operation*	*Stay in Hospital*	*Result on Discharge*
1	Wm. Knox......	19	Gonorrheal infection joints	Seminal vesiculectomy	47 days	Left wrist stiff. No pain in joint except on motion
2	A. Young.......	23	Gonorrheal infection joints	Seminal vesiculectomy	39 days	Walked fairly well. Slight pain in joints
3	J. O'Toole......	22	Gonorrheal infection joints	Seminal vesiculectomy	45 days	Both ankles swollen, slightly tender; joint pains gone
4	B. Cisse........	27	Gonorrheal infection joints	Seminal vesiculectomy	45 days	Pain in left foot still present. Patient gets about with cane
5	E. McLean......	25	Gonorrheal infection joints	Seminal vesiculectomy	58 days	Pain in joints still present; getting about fairly well
6	P. Stark........	33	Gonorrheal infection joints	Seminal vesiculectomy	35 days	Very slight improvement in joint conditions
7	H. Heitman.....	45	Gonorrheal infection joints	Seminal vesiculectomy	67 days	Some improvement. Patient able to hobble, but seems skeptical as to the results
8	M. Siro.........	35	Gonorrheal infection joints	Seminal vesiculectomy	42 days	Swelling of joints when patient is up and about. Tenderness on pressure on both ankles
9	J. Joseph........	26	Gonorrheal infection joints	Seminal vesiculotomy	139 days	Patient walks well except for slight pain in heel. Has urinary fistula in perineum
10	J. Owens........	41	Gonorrheal infection joints	Seminal vesiculotomy	94 days	Very little improvement following operation. Knee joints swollen and painful. Patient uses crutches

Summary—10 cases--Average 29.6—2 vesiculotomies—-8 vesiculectomies—Average stay in hospital 61.1—Good 3 Fair 6—Poor 1

TABLE III.

CASES TREATED BY HEAVY CASTS, REST IN BED, AND BAKING

No.	*Name*	*Age*	*Diagnosis*	*Stay in Hospital*	*Condition on Discharge*	*Condition Later*
1.	W. Hughes........	22	Gonorrheal Inf. Joints	35 days	Patient walked out of hospital with no limp or pain.	Return clinic three weeks after discharge. Some fluid in right ankle and flat foot present. Ankle strapped with adhesive.
2.	Wm. Lewis.......	31	Gonorrheal Inf. Joints	46 days	Patient walked out of hospital with no limp or pain	Three weeks after discharge. No pain or stiffness in any joint. Patient returned to Army Camp.
3.	I. Headrick.......	26	Gonorrheal Inf. Joints	61 days	Slight amount of fluid in right knee. Patient walks with no limp or pain.	....
4.	P. Miller.........	27	Gonorrheal Inf. Joints	36 days	Pain and swelling of both ankles entirely disappeared. Walks fairly well.	....
5.	A. Gulano.........	23	Gonorrheal Inf. Joints	40 days	Pain and swelling of elbow gone. Slight limitation of flexion and extension still present.	....
6.	E. Hendricksen....	28	Gonorrheal Inf. Joints	60 days	Pains in right ankle and knee, left elbow and wrist entirely disappeared. Patient walks without limp. Slight swelling of right ankle during the day.	....

Summary—6 cases—Average age 26 1-6 years—Average stay in hospital 46 1-3 days—Good 4—Fair 2—Poor 0

TABLE IV

TABLE SHOWING ORGANISMS FOUND IN CHRONIC PROSTATITIS

No.	*Name*	*Age*	*Diagnosis*	*Most Prominent Symptoms*	*Organisms Present*
1	F. S. T.........	48	Chronic Prostatitis	Pain in back, legs and shoulders	Staphylococcus aureus
2	F. D............	30	Chronic Prostatitis	Pain in chest; nervousness pronounced	Staphylococcus aureus
3	C. A............	29	Chronic Prostatitis	Myositis mild—Poly arthritis	Staphylococcus albus—two diphtheroid types
4	G. M............	30	Chronic Prostatitis	Perineal pain	Staphylococcus albus—Streptococcus viridans
5	C. E............	35	Chronic Prostatitis	Pain in back and perinaeum	Staphylococcus albus—Bacillus pyocyamus—Micrococcus vaginalis
6	J. M............	32	Chronic Prostatitis	Pain in both knees	Staphylococcus aureus
7	H. C............	45	Chronic Prostatitis	Pain in neck, right shoulder and back	Staphylococcus aureus-Micrococcus tetragenes
8	M. S............	34	Chronic Prostatitis	Severe arthritis knees	Streptococcus viridans
9	A. W............	35	Chronic Prostatitis	Pain in back, legs and joints	Staphylococcus pyocyamus-Hemolyticus albus
10	E. P............	38	Chronic Prostatitis	Painful exostosis, both heels	Staphylococcus albus
11	C. De...........	28	Chronic Prostatitis	Persistent disch. pain in back	Mucinous gonococcus—Mucinous tetrad—Staphylococcus albus
12	P. M. W........	50	Chronic Prostatitis	Multiple extreme arthritis	Streptococcus viridans—Staphylococcus albus Bacillus proteus
14	R. B............	44	Chronic Prostatitis	Myositis	Staphylococcus aureus
15	G. A............	22	Chronic Prostatitis	Arthritis ankles	Staphylococcus aureus
16	J. T............	34	Chronic Prostatitis	Pain in perinaeum	Staphylococcus albus—Micrococcus tetragenes
17	J. J. Mc........	48	Chronic Prostatitis	Painful deformed joints of hands	Staphylococcus aureus—Staphylococcus albus

patient only having a consolidation of the right upper lobe.

Other structures damaged or abnormal were as follows:

Thirty-four had urethral discharge and three a vaginal discharge; of these seventeen had gonococci present.

The inguinal glands were considerably enlarged in ten per cent. of the cases. Six cases had a lesion on the penis (eruption or scar).

The eyes were infected in two cases, four patients had acute epididymitis, one had had a previous seminal vesiculotomy performed, one a thickening of the globus minor, and one a blotchy rash.

Rectal examination was not made in a good many of the cases. Some of them were females. Thirteen per cent. of the cases showed the prostate to be pathological with an accompanying involvement of the seminal vesicles in all cases.

Gonococcus fixation test was positive in six cases, negative in four cases, and indefinite in ninety cases. A positive Wassermann was obtained in two cases, doubtful in four cases, negative in eleven, indefinite in eighty-four.

The average white blood count in five cases examined was 11,500, average differential count for the same cases, eighty per cent. polymorphonuclear leucocytes, seventeen per cent. lymphocytes.

TREATMENT.

The treatment utilized varied considerably, as might be expected from the fact that the patients were under the care of physicians, surgeons, urologists, and gynecologists.

All but three per cent. were given rest in bed. Fifty-one patients received local treatment for the affected parts: this consisted in the application of a plaster cast in twenty-two per cent. of cases, bandage in six per cent.; baking, fifteen per cent.; oil of wintergreen, eleven per cent.; ice bag, eleven per cent.

TABLE V.

TABLE SHOWING ORGANISMS FOUND IN SUBACUTE PROSTATITIS WITH ACUTE ARTHRITIS.

No.	*Name*	*Age*	*Diagnosis*	*Most Prominent Symptoms*	*Organisms Present*
1.	M.	19	Multiple acute arthritis	Painful swollen joints	Gonococcus
2.	H.	36	Multiple acute arthritis	Painful swollen joints	No organisms
3.	G.	25	Multiple acute arthritis	Painful swollen joints	Hemolytic streptococcus
4.	Ss.	28	Multiple acute arthritis	Painful swollen joints	Gonococcus staphylococcus albus
5.	Se.	30	Multiple acute arthritis	Painful swollen joints	Gonococcus staphylococcus albus
6.	Hs.	30	Multiple acute arthritis	Painful swollen joints	Staphylococcus aureus Staphylococcus albus
7.	Hn.	34	Multiple acute arthritis	Painful swollen joints	Gonococcus Staphylococcus albus hemolytic streptococcus

Eighty-seven injections of vaccine were given to twenty-seven patients; of these, ten received gonococcus vaccine, fifteen typhoid, and two both. A chill followed the injection of vaccine in nine cases, and eighteen patients had fever. Nine patients had neither chill nor fever after the vaccine. Four patients were nauseated, and seven complained of pain.

The patients treated with vaccines practically all had internal treatment as well. Seventeen of these patients showed marked improvement, the other ten did not show any remarkable change.

Considerable relief of pain and general improvement was noted in thirty-three per cent. of all cases. Seventeen per cent. of the patients experienced no relief. In forty-seven per cent. results were indefinite.

The average stay in bed was thirteen days, the longest period was forty-eight days, and the shortest two.

A series of cases in which the patients suffered from arthritis with enlarged seminal vesicles were operated upon. It has been our practice to operate only upon those patients in whom the seminal vesicles were enlarged and which did not empty upon stripping. When it is possible to strip these by massage the operation is obviously unnecessary. In cases in which there was no enlargement appreciable to the palpating finger it does not seem reasonable to imagine that there is any marked degree of pus retention requiring drainage.

DESCRIPTION OF OPERATIVE CASES.

Ten patients have had operations upon the seminal vesicles for arthritis during the past five months at Bellevue Hospital. Two of these cases were seminal vesiculotomies, and in the others total removal of the vesicles was practiced. These patients varied in age from nineteen to forty-five years, the average being twenty-nine and six tenths years. The time spent in the hospital varied from thirty-five days to 139 days, the average being sixty-one and one tenth days. All of the cases except three were of less than two weeks' duration. One case had persisted for six months, one nine months, and another one year. A recent gonorrhea had existed in all seven of the acute cases, the organism being demonstrated. Six of the cases were bedridden—four ambulatory. Two had had a previous attack. Two had syphilis as well as gonorrhea, and one of these also had tuberculosis. The joints affected were: knee in thirteen cases, ankle eight cases, hips five, foot five, wrist two, hand one, thumb one, shoulder one, and toes, one.

Fever on admission occurred in four cases; râles noted in lungs of two cases.

TABLE VI.

RESULTS OF VARIOUS FORMS OF TREATMENT.

Treatment	*Number of Cases*	*Average Number of Days in Hospital*	*Cured*	*Improved*	*Unimproved*
Internal Medication	100	13.6	0	33	17 50 Indefinite
Local application	17	18.3	0	12	5
Vaccines	11 Gonococcus	33.5	0	7	4
	16 Typhoid	25	0	10	6
Palliative treatment of the prostate and seminal vesicles	9	None	2	5	2
Casts and splints	23	18	0	11	12
Heavy casts and baking	6	46.3	0	6	0
Operations upon seminal vesicles	10	61.1	0	9	1

The teeth were diseased in five cases, and tonsils removed in four.

The prostate was definitely pathological in five cases, and the seminal vesicles enlarged in all except one.

Treatment consisted of rest in bed in all cases. Urinary antiseptics and local applications to the joints with fixation (casts and adhesive). Internally, sodium salicylate was given.

RESULTS OF OPERATION.

All except two were partially or entirely relieved of pain. The postoperative temperature was normal in each instance. The average stay in bed after operation was ten and seven tenths days, the shortest being six days and the longest twenty-two days. (See Table II.)

CASES TREATED BY HEAVY CASTS.

In a series of six cases the patients were treated by very heavy casts, applied to the affected parts, and given no medication except urinary antiseptics, and no local treatment other than baking of the affected parts, were very carefully studied with the assistance of Dr. Collings and through the courtesy of Dr. E. L. Keyes, Jr.

ORGANISMS FOUND IN CHRONIC PROSTATITIS.

A series of twenty-seven cases where the patients suffered from chronic prostatitis with joint symptoms is very interesting. The technic employed in obtaining uncontaminated prostatic fluid is as follows:

The urethra is irrigated, first by the urinary act of the patient, then by potassium permanganate, one to a thousand. A sterile endoscope is then passed through the external sphincter, barely into the prostatis urethra. The prostate is then massaged and the fluid obtained as it drips from the end of the endoscopic tube. If there is not sufficient fluid obtained to run out it is removed by a sterile applicator and thus introduced into the culture media. In this manner uncontaminated prostatic fluid is easily obtained.

The results obtained from cultures of prostatic fluid are shown in the accompanying chart.

The technic followed by Dr. Collings in this series of cases is as follows:

Careful measurements are made of all affected parts. The limb is wrapped in one thickness of cotton wadding from toes to groin, about four thicknesses being placed over the heel, malleoli, and knee. The cotton is held in place by a circular gauze bandage. A posterior splint, made of eight thicknesses of four inch plaster bandage, is molded to the conformity of the leg from gluteal fold to the tip of toes. The assistant holds the limb with knee in partial flexion, and the ankle at a right angle to the long axis of the limb. Circular plaster bandages are applied from the toes to groin at a thickness of one cm., except at the knee and ankle, where extra turns are taken.

At the end of two weeks the cast is removed, all joints are flexed and extended several times, care being taken not to flex the limb beyond a point where it starts pain. The limb is massaged, measured, and cast reapplied for another two weeks' period.

At the end of this period (a month), the affected parts are given heat therapy by means of electric light baking apparatus. Ten fifty watt lights are used for this purpose. The first four days the limb is baked for thirty minutes at a temperature of 150° F.; from the fourth to the seventh days the length of time of baking is increased to one hour, temperature raised to 200° F. and light massage started. After the first week, more active massage. The patient is permitted to walk about the tenth day.

A good example of this type of case follows:

Case I.—W. L., white, male, aged thirty-one; soldier. Admitted to Bellevue Hospital November 3, 1919. Chief complaint, pain in knee joints. Family history, negative, except patient's statement that mother was troubled with rheumatism. Past history: alcohol in excess; lost twenty pounds in three months. Venereal: gonorrhea, 1914, no complications; again in 1918, and has been present with recessions since, the last time in September, 1919. Previous attack of gonorrheal arthritis, August, 1918, involving left metatarsal-phalangeal, both ankles, both knees and left elbow joints, lasting two months.

Present illness: about four weeks ago both knee joints began to swell and became quite painful, "red hot"; temperature 103°. Two days later pain and swelling appeared in left ankle joint. Physical examination was negative, except for the fact that patient was unable to walk and left knee was slightly swollen and tender, the tenderness being more marked on lateral aspect, little fluid present; right knee also tender to touch, without swelling; similar signs about left ankle. Rectal examination showed the prostate enlarged to twice the usual size, borders bound down by adhesion, right side normal, left side much indurated. Seminal vesicles not enlarged. Prostatic fluid showed pus 80 per cent., lecithin 10 per cent., compound granular cells 5 per cent., epithelial cells 5 per cent. Nose and throat examination: Sinuses transilluminate clear, tonsils hypertrophied; cryptic and cheesy exudate can be expressed. Tonsillectomy advised and performed. Dental examination: Mouth in fair condition. Advised x ray examination of lowers. Radiogram, negative. Urethral smear shows gram negative, intracellular diplococci. Wassermann, negative. Gonococcus fixation, two plus. Radiogram of joint shows no bone involvement. Patient discharged December 19, 1919, thirteen days after removal of cast and forty-six days after admission to the hospital. Discharge note: Patient leaves hospital able to walk well. January 29th: Patient reported at return clinic that he had recently walked three miles without pain or discomfort. He is now being treated for chronic inflammation of his prostate gland.

Another interesting series of cases treated somewhat differently is worthy of mention: Seventeen patients, suffering from joint and muscle pains but not so incapacitated as to be confined to bed, were treated in a palliative manner. This treatment consists of prostatic and seminal vesicle massage, instillations, dilations, irrigations, etc. In addition, these patients were given vaccines. Three of these cases responded in a very spectacular manner to prostatic treatment.

Case II.—J. J., thirty-four years of age, a stage carpenter by occupation, presented himself after having recently spent a period of ten weeks in bed. He walked with the greatest of difficulty by using canes, and was in extreme pain. Digital examination of the prostate by rectal palpation revealed a gland about half again the usual size, indurated moderately throughout with several nodules near the base of the gland on each side. Many cordlike adhesions extended from each lateral surface to the surrounding pelvic structures, particularly at the base. The seminal vesicles were barely palpable on each side. Prostatic fluid, expressed by massage, was found to be loaded with pus, practically no lecithin being present. There were a few epithelial cells and an occasional compound granular cell. The patient was given a prostatic massage every other day for two weeks. After the massage, he passed his urine and about one dram of ten per cent. argyrol was instilled into the urethra with a very soft rubber catheter. He was able to return to his work, and the treatments were continued for a period of two months, with the result that his joints cleared up so that he walks with only a slight limp, and is able to attend to all his arduous duties.

Case III.—M. S., aged thirty-four, complained of severe pains and swelling of both knees, particularly the left, and was subjected to a thorough examination. Teeth, tonsils and sinuses were eliminated as sources of the disease. The prostate and seminal vesicles were found to be considerably damaged, and the fluid expressed contained much pus. A considerable number of treatments were not followed by the customary improvement in the symptoms or the pathological elements of the prostatic fluid, so a culture was made which showed the presence of Streptococcus viridans. Vaccine made from this culture was then given as an adjunct to the local treatment and a prompt improvement of the entire condition resulted.

Case IV.—C. D., twenty-eight years of age, complained of severe pain in legs and small of back and a persistent discharge, and presented himself several months after a Neisserian infection. During all of this time the patient had been in excellent hands and had received very careful treatment. Continued local treatment did not relieve the situation, gonococci still being found in the prostatic fluid. A culture taken showed the presence of a peculiar mucinous Gonococcus M. Tetrad and Staphylococcus albus. Administration of a vaccine made from these organisms caused a cessation of the discharge and a disappearance of the organisms from the prostatic fluid after four treatments.

Case V.—P. W., aged fifty, suffering from polyarthritis, bedridden, and gradually getting worse over a period of five or six years. All other foci were eliminated, and finally an examination of the prostate revealed an organ slightly diminished in size and flattened, being bound down by many adhesions extending from each lateral border. The prostate was markedly indurated. The fluid expressed showed a moderate amount of pus present, from which Streptococcus viridans, Staphylococcus albus and Bacillus proteus were cultured. After a course of prostatic massage, lasting five or six months, the patient was able to take an automobile ride of twenty-five miles, and to perform such functions as deal cards and feed himself. His general condition improved remarkably. His pulse, which had been as high as 130 and averaged 120, dropped down to 80. Various other improvements were noted, such as gain in weight and general appearance. Vaccine caused such a terrific reaction in his case that it had to be discontinued absolutely.

SUMMARY OF RESULTS.

A review of the results obtained by these various treatments is shown in Table VI. It is noted that they are not particularly brilliant in any of the series enumerated. A particular point that one notices is that better results were obtained by operation and by cast methods than any other, the period of residence in the hospital being two thirds as long in the latter as the former.

The use of internal medication was productive of less improvement than any of the other methods tried.

Local applications to affected joints proved beneficial in three fifths of the cases tried.

Gonococcus vaccine was beneficial in seven cases of eleven injected, and typhoid vaccine used in sixteen cases was at least temporarily beneficial in ten.

Palliative treatment of the prostate and seminal vesicles resulted in two complete cures, five cases in which distinct improvement was noted, and two cases in which there was no improvement.

Casts and splints were used in twenty-three cases. Improvement followed in less than fifty per cent. of the cases, but the series of carefully treated cases in which heavy casts were applied and the joints baked afterward were signally successful, all showing marked improvement.

Operations upon the seminal vesicles showed improvement in nine out of ten cases.

CONCLUSIONS.

1. No case of arthritis in the male adult is properly investigated, unless a rectal examination is made.

2. Prostatic fluid should be examined in the fresh state under the high power lens of the microscope to determine the presence of pus or pathological elements. The process of staining masks the true conditions in some instances.

3. In a chronic prostatitis the gonococcus is rarely met with.

4. Treatment suggested in very acute arthritis (gonorrheal):

A. Rest in bed.

B. Massive doses of gonococcus vaccine seem to allay the pain in many instances.

C. In some cases vaccine relieves the pain temporarily. In fact, almost any procedure, including the administration of an anesthetic without operation, will relieve the discomfort temporarily.

D. Dr. Collings's work on very heavy casts proves his method to be as beneficial as any other treatment tried, if not more so.

E. Dr. Keyes's suggestion that the proper time to operate upon seminal vesicles is in the earliest stage of acute gonorrheal arthritis, may turn out to be a very valuable plan to pursue.

F. It would seem logical to me that the only kind of seminal vesicles that should invariably be operated upon are the ones distended with pus, that cannot be emptied by stripping, and that seminal vesiculectomy is the preferable operative procedure. This applies to cases of acute and chronic arthritis.

G. After the very acute joint symptoms have subsided, the prostate and seminal vesicles should be treated until they are cured. If they are left in a state of chronic inflammation, the patient is harboring a slumbering volcano which may burst into activity upon the slightest provocation.

H. Autogenous vaccines, obtained from prostatic and seminal vesicle fluid have proved to be extremely valuable adjuncts in some instances. They should be used in conjunction with routine prostatic treatment, however, otherwise the prostate will remain a scarred, leathery mass, bound down by adhesions, and a constant source of irritation.

5. One should not approach the subject of arthritis with a fixed plan of procedure. The type of treatment should be determined by the character of the case.

REFERENCES.

1. Barker, Llewellys F.: Differentiation of the Diseases Included Under Chronic Arthritis. *American Journal of Medical Sciences*, January, 1914.

Quartz Light Therapy in Obstinate Prostatic Affections

By DONALD McCASKEY, M. D.,
New York.

This article cites forty-five obstinate cases of prostatic disease in which the glands were directly treated by quartz ultra violet light. Groups of these cases represent types that commonly harass the physician to the desperation point. All of these cases had been previously treated by colleagues, and had not cleared up entirely until the quartz light was brought into action. In none of them had quartz light ever been previously administered. Thirty-five of these cases are my own. Ten are those of Major C. M. Sampson, of the United States Public Health Service, located at Fox Hills, Staten Island.

I am not speaking here of those cases of enlarged sclerotic prostate, where the gland is the size of and as hard as a croquet ball, and where there is urinary retention. I have had no experience with these. That is the field of the genitourinary surgeon. Likewise, cases of tuberculous prostatitis are not included in this report. At a later date I may have something to report on this phase of the subject. At present I feel that it is a case of suspend judgment.

I am discussing solely three general classifications, as follows: The acute and chronically infected prostates. The functionally deranged prostate without infection. The prostate and seminal vesicles in which there exists inherently some potential comeback power, which power can be unlocked or tapped and utilized if adequate quartz light technic is applied, but without which technic impotency exists.

In other words, it is the stubborn, unyielding prostatic abscess case with positive smears, either gonococcus or mixed infection; the enlarged, boggy prostate with negative smears, but with a long train of subjective disorders; the deranged prostate and seminal vesicles with accompanying impotency that lie within the compass of this report. Two of my patients were city officials, one a tailor; fifteen were clerks; five were corporation executives; seven were business men; five were brokers. Sampson's ten patients were soldiers in the recent world war.

My own technic in prostatic work involves the use of a specially built quartz hollow tube applicator, six inches long. It is an inch in diameter. This tube is fitted to a Kromayer lamp. The patient's posture is a standing one, the body bent forward at right angles. The prostatic applicator, moistened with water and soapsuds, is gently inserted into the rectum with an upward tilt until the resistance of the gland is encountered. The patient will usually complain of subjective discomfort and a desire to urinate. The first dose is of three minutes on the first rheostat button. Within the first few hours a subjective reaction of the patient occurs, which is normally a sense of fullness at site of treated area. Occasionally some prostatic fluid oozing and mild micturition excitability occurs. After three to five days the second dose is given, five minutes' duration, first rheostat button. Usually the reaction of tenderness and congestion subsides in a day or two. At intervals of from three to five days thereafter treatments are repeated, the time dose being increased steadily up to fifteen minutes and to second speed rheostat button. During this time the tenderness and bogginess subside, and as this condition reveals itself, I depress the prostatic tube and press down over each seminal vesicle and each lateral lobe of the prostate. Where the rectum contains fecal matter, this of course must be removed by an enema before starting, or by castor oil taken the night before treatment. Otherwise the applicator will be imbedded in the feces and no actinic light will reach the tissue aimed at. Owing to the marked mucous membrane stimulation there will likely be a show of blood on defecation. This is quite normal. If this blood persists over several days, in my judgment the treatment intervals should be lengthened and treatment not renewed until all blood signs have ceased.

Major Sampson's technic is essentially the same as my own, except that he uses diathermic treatment in conjunction with quartz light, and he does not give the large doses which I have found so effective. He also treats his patients every day. His prostatic applicator is made of solid quartz, and has a bevelled edge which fits down like a curved cap over the prostate gland. He believes this to be a very essential feature. In my cases I have not found that I need it as yet. After an average of ten treatments my experience has been that the patient's prostate has returned to normal size and palpable normal consistency. Prostatic discharge of chronic shreds and débris has ceased and sexual functional power is markedly improved. In twelve cases of functional impotence ranging from thirty to sixty-two years a return of sexual power occurred. In two of these cases a decidedly vigorous return resulted. Every patient remarked voluntarily during some period of the course of treatment that his erectile proclivities were significantly manifest. I make this statement in all seriousness because of its vital importance and bearing and influence upon the basic psychology of the genus man in general and sick man in particular.

In this same field of prostatic work with quartz light, Major Sampson reported to me personally a short time ago that, out of ten prostate cases with abscess formation and positive smears, after the sixth treatment seven of the cases showed negative smears, and, after additional treatments, the other three finally cleared up also.

There is no magic or mystery or smoke screen phenomena about Sampson's and my own results with these obstinate prostatic cases. It is a case of a clearing up process. A particularly obstinate case was recently referred to me by Dr. George A. Wyeth, of New York. I was the thirty-seventh physician. Dr. Wyeth declared the case to be an *in extremis* and hopeless one, and it was with the prelude knowledge that the patient had been in the hands of some of the most eminent genitourinary surgeons in Australia, England and America, that I started quartz light treatment. The man was aged thirty-three years, a silk merchant from Melbourne, Australia. Within a month his sexual power returned. Within three months he had recovered to the point where he could leave for the Orient. Dr. Wyeth has a detailed history of his case.

TECHNIC AND JUDGMENT.

Many of my colleagues have not achieved much or even any result in prostatic work with quartz light. One genitourinary surgeon here in New York told me some time ago that in earlier years he had worked with Dr. Hugh Young, of Baltimore, and that the conclusions formulated by Young were that ultra violet light was not satisfactory. There are many reasons why this conclusion formed then was correct. Faulty technic in the use of quartz light is a simple matter for any colleague to correct. But he must study it out for himself. Learning the technic of ultra violet therapy is a good deal like learning to drive a fractious horse that has the real worth in him. I might give instructions as to what you are to do—how to hold the reins, when to coax, when to urge, when to whip or saw on the bit—when to steady him with your voice. But what are you going to do when, as a beginner, you try to drive this horse around a loud, thunderous, oncoming traction engine on the highway?

No written word can actually perform the work of your own mental operations translated into physical action. That is horsemanship, pure and simple. It can only come by study and experience. The analogy is identical with the therapeutic use of quartz light. Broken to harness, this powerful dynamic force can be utilized constructively to a wonderful degree not now appreciated.

SUMMARY.

Faulty technic in the use of quartz light should not be charged against the constructive power of this light, working dynamically or physiologically, physically, or by fluorescent means—whatever the way may be—upon disordered tissue cell function.

Ultra violet light therapy is a powerful and prompt remedy in clearing up obstinate prostatic cases before the period of sclerotic enlargement changes have set in. It may be we will learn how to help some of these latter types of cases, too, as future technic is improved and more genitourinary surgeons get to using the Kromayer lamp and build their own special applicators and appliances. But this is for the future.

24 WEST FIFTY-NINTH STREET.

The Suppression of Public Prostitution a Factor in the Spread of Venereal Disease

By ABR. L. WOLBARST, M. D.,
New York.

However paradoxical the title of this paper may sound, it is the sincere conviction of the writer that there is abundant evidence available to show that the paradox is more apparent than real. In a future publication, now under preparation, I hope to be able to present statistical data which will support this contention; for the present, it is purposed merely to call attention to this phase of the subject and thereby stimulate further thought and study along these lines.

An experience in the treatment of venereal disease contemporaneous with the period in which the campaign against public prostitution has been under way, leads unmistakably to the view that prostitution and venereal disease are coincident factors in our complicated economic and social existence, but that they are not necessarily interdependent. It were futile to deny that sexual promiscuity is the greatest single factor in the propagation of venereal disease, and the professional prostitute always has been charged with being the arch offender in this respect.

Nor can there be any denial of the fact that the campaign against organized prostitution has been eminently successful in the sense that the professional prostitute has disappeared from many, if not all, of our large cities. The streets of New York, in particular, may be said to be practically free from the soliciting prostitute, while the resistless pressure of public opinion on houses of prostitution has resulted in their almost complete disappearance. The public has been educated within the past decade or two, to resent the outward manifestations of this business, and the result has been most satisfactory from this angle.

However, one cannot study this subject without observing that there has been a marked change during the past quarter of a century, in what might be termed the style or fashion in which prostitution has been conducted. In response to the pressure of public sentiment, the old time house of prostitution gradually gave way to the house of assignation—usually a hotel of unsavory reputation, which in turn gave way to the "call" house. This latest development found a "madam" and several girls safely protected within the walls of a modern apartment house, living among respectable families and gradually undermining the environmental morale by a slow but inevitable boring in process.

The most recent fashion in public prostitution calls for the occupancy of a fashionable apartment or flat by one woman or several on the cooperative plan, but it is evident that the secrecy under which the practice must be carried on, militates against a long stay in any one place.

.It may be said, therefore, that prostitution as a business or a profession, has been so severely dealt with, that it cannot any longer be considered a serious factor in the social life of the community. But while it is true that the public prostitute, as we knew her twenty years ago, has disappeared, we must not lose sight of the fact that this gain in our communal life probably is more apparent than real. The old time prostitute of the streets has gone, it is true, but a new type has taken her place. The form has changed, but the substance remains the same.

The sex desires of men and women have not been altered, sufficiently to notice the change, by the suppression of the professional prostitute and the bawdy house. These desires will be gratified, are being gratified, in fact, nothwithstanding the efforts of the good men and women who have been devoting so much of their energies to the suppression of prostitution. The sex problem laughs at man made laws; its manifestations may be suppressed in one direction only to appear elsewhere in another form, just as strong and tantalizing as ever, possibly more so. And thus we find the situation today. Prostitution apparently banished, yet flourishing in another form, and probably more widely disseminated than ever before.

It must be obvious to even a casual thinker that the suppression of prostitution has not suppressed or repressed the particular demand which it has supplied from time immemorial. We have been unable to observe any appreciable increase in the sex morality of the community; the sex urge seems to be just as omnipresent and imperious as it ever was, and possibly more so. But the professional prostitute has become a matter of history, and in her stead has appeared an army of clandestines or amateurs which bids fair to wreck the very foundations of society.

This new type has evolved during the past decade or two in response to the inexorable law of demand and supply. She is young, pretty, attractive; she bears no resemblance whatever to the miserable, brokendown, wornout, prematurely aged hag, who eked out a miserable existence soliciting on the streets or from behind green blinds. If you pass her on the street, you would never realize that you are standing face to face with society's greatest tragedy; she passes without even noticing you. Even if you were to make the first advance, she might snub you and possibly call a policeman. Her conduct is as exemplary as that of any young miss out shopping or walking. She dresses stylishly, and is neither more nor less lavish in the use of henna, lip stick, rouge and black crayon than her respectable sister. You cannot tell them apart. She belongs to no class, race or creed; any girl of good family, or no family whatever, may join the ranks. She may be seen on the crowded dance floor in the fashionable hotel, and in the subway jam, going to or from her work. In brief, she is any girl at all who has given way to the importunities of her "gentleman friend."

To the average man who formerly sought the favors of the professional prostitute for the satisfaction of what to him was an uncontrollable physiological demand, every girl today is fair game, and the pursuit is constant. Those who formerly satisfied his demands are no longer within reach. He must find relief and satisfaction whenever and wherever the opportunity offers, and is not slow to create the opportunity.

President Eliot recently pointed out how the manners and general deportment of the young people of today have changed from former days, his days of chivalry. One does not require so eminent an authority to point to these changes in the sex relations. There is a marked freedom in thought and action, and it is particularly noticeable in the amorous dancing fashions and the dress of women. All of this undoubtedly is sexual in origin and significance, and serves the double purpose of attracting the male as well as satisfying the female sex hunger. Everything today aims at sex stimulation—witness the drama, the screen play; dancing is plainly and undisguisedly sensuously sexual, and the exquisitely beautiful styles in feminine attire can serve no other purpose than to arouse sex hunger in the male. The sex appetite cannot, with impunity, be stimulated continuously without gratification. With all this constant and ever present hyperstimulation of the sex instinct and the suppression of the ever willing source of gratification (the prostitute), is it to be wondered at that promiscuity inevitably follows?

Propinquity, proposal and gratification follow one another in rapid sequence, all under the imperious and irresistible dictates of the gonads. Prostitution has been termed the safety valve of society. Present day conditions throughout the world prove the truth of this dictum, though in our striving for a better and cleaner manhood and womanhood, we have persistently covered our eyes with blinkers rather than witness its truth. There can be no doubt but that the suppression of prostitution, however commendable it may be, has been the cause of girls and women innumerable falling from the straight and narrow path, impelled by their own sexual endowments under the gonadal attack of men.

In the various strata of society we find conditions essentially the same, though differing in outward aspects. The poor working girl succumbs to the irresistible inducements of "a good time" and perhaps a bit of finery or fur. She is not inherently bad or immoral, but merely human. The economic conditions under which she manages to live, the squalor of her tenement life, the poverty and sordid existence of her family, the drudgery of the factory and its meager pay, the high cost of merely living and the easy way to luxury and fine things, for which her feminine heart craves, all of these tend to blunt her moral reactions, and her resistance is shattered; and waiting around the corner stands the young "gentleman friend," sexually stimulated and driven to the chase by strong instinct and depraved thinking, ready to pounce on his already weakened prey as it appears within easy reach. The result need not be described in detail.

Our venereal and gynecological clinics, and our consulting rooms offer indisputable evidence of the widespread dissemination of venereal disease among these young girls and their partners; and to make matters worse, they are entirely in ignorance of the most simple rules of prophylaxis and personal cleanliness. And if our institutions for unmarried mothers were investigated, it would be found that the majority of their unhappy inmates are young girls ranging in age from sixteen to twenty. How many abortions are performed on these girls, none can say, but the number would stagger humanity if the full truth were known.

If the girl is a little more lucky in the game in which she is so valuable a pawn, she passes by gradual stages into the next phase of this inquiry. Her economic condition is somewhat better. She lives at home, or in an unpretentious rooming house. She may be a saleslady, a stenographer, a model or a "show girl." Her neighbors know her as a hard working girl, but they cannot understand how she manages to wear such fine clothes on her slender earnings. She spends many of her evenings at home, or with a sick friend; her "gentleman friend" occasionally calls for her in his car for a ride and a "good time," part of which is spent in a hotel or in his apartment, or in the apartment of a friend who has given him the use of it for the evening. There are many such apartments in New York. Venereal disease is not quite so flagrant in this class, because of the better facilities for cleanliness and prophylaxis, but it is quite common, nevertheless; and the same may be said of abortions.

If the girl is extremely "lucky" in the selection of her "gentleman friend," she lives in a fashionable apartment, with or without a personal maid; she may have a car and chauffeur at her call, and she may spend many weekends out of town. Her neighbors know her as a quiet, decent sort of person, minding her own business, receiving few or no callers. Her "husband" is a somewhat elderly business man whose interests keep him out of town much of the time. The rent is paid regularly and usually exceeds the amount sanctioned by the emergency rent laws. She may have an occasional young visitor to keep her from being lonely while her "husband" is on one of his trips, but he is likely to be a well-dressed, attractive looking young man, quiet and well mannered; and if he should happen to prolong his visit somewhat unduly, so that the milk man has already arrived, he proceeds to his place of business seemingly fresh and well rested. And thus she spends her days in comfort and luxury, notwithstanding the fact that she toils not, neither does she spin.

Add to these the married women, countless in number, who for one reason or another, contribute their quota to the supply of the ever present demand, and the indictment is complete.

It need not be emphasized that these promiscuous sex relations necessarily propagate venereal disease; and it is probably within the truth to say that there is as much venereal disease in the community today, as there ever has been. This is probably true in spite of the increasing knowledge and practice of venereal prophylaxis learned by young men while in military service during the recent war.

In conclusion, I desire to emphasize the belief that the suppression of prostitution has not diminished illicit sexual relations; that it has resulted in widespread moral looseness and sex stimulation; that it has caused the moral and physical ruin of many girls who might otherwise have remained clean and unscathed; and finally, that it has not perceptibly diminished the amount of venereal disease, but on the contrary has caused its dissemination in a wider circle, especially in the poorer strata of society. I trust this paper may have the effect of encouraging further study and research along these lines, in the hope that the truth may be arrived at, for only the truth can set us free.

792 Lexington Avenue.

The Origin of the Word Syphilis

By HON. WILLIAM RENWICK RIDDELL, LL. D.,
Toronto, Canada,
F. R. Hist. Soc.; President, Canadian National Council for Combatting Venereal Disease.

That syphilis made its appearance in Europe in the last decade of the fifteenth century and during the invasion of Italy and siege of Naples by Charles VIII is a fact universally admitted—that there is no trace of its existence previously in Europe or Asia is practically certain—indeed, as nearly certain as anything can be that must depend on negative evidence alone. It is incredible that Aristophanes in all his ribald wit, Horace and Ovid in their jocose and serious plaints of love, had they known of syphilis, should have omitted to mention this the most terrible evil to which the lover is exposed and the objects of the shafts of the wittiest and most ribald where it was known (1). Juvenal, in his fearful lashing of the vices of his Rome, could not have failed to say something of this the consequences of one kind of vice, had he ever heard of it; pox is as familiar in Shakespeare's mouth as household words. The Bible, one of the great magazines of information concerning the Eastern world, contains nothing that can fairly be referred to this disease (2); the Arabian Nights, another such great magazine of knowledge, is equally silent. Its importation from the New World may admit of honest doubt (3)—but that it was not known in the Old World before the discovery of the New by Christopher Columbus may be taken as certain.

The name given to the fearful plague by the several peoples of Europe generally had reference to the place from which it had come to them. The French called it *Mal de Naples,* the English *French Pox,* and in the course of time it acquired hundreds of names more or less appropriate or opprobrious (4), the usual name in the profession being *Morbus Gallicus.* All these names have given way to the mysterious one, syphilis, which is now employed all over the world (5).

That this name owes its invention to Girolamo

Fracastoro (6), of Verona, all now admit, but the derivation has been a matter of much doubt and discussion. Fracastoro (Latinized *Hieronymus Fracastorius*) published his celebrated poem, *Syphilidis seu morbi Gallici libri tres* in 1530, and in the third canto of this poem we find for the first time the word syphilis—clearly an invention of the author. In Fracastoro's book, then, we must look for the derivation of the word.

In the first canto the author is concerned with the etiology and pathology, or at least the symptomatology, of the disease. He considers it due to some cosmic cause not earthly, but emanating from the outer universe, and he considers that it frequently attacks not one country alone but all the world at once. Of course this theory was wholly in accord with current views of plagues and epidemics. Some of his symptomatology may be worth quoting:

> Scilicet extemplo non sese prodit aperte,
> Ut semel est excepta intus, sed tempore certo
> Delitet, et sensim vires per pabula captat.
> Interea tamen insolito torpore gravati,
> Sponteque languentes animis et munera obibant
> Aegrius et toto segnes se corpore agebant.
> Ille etiam suus ex oculis vigor, et suus ore
> Dejectus color haud laeta de fronte cadebat.
> Paulatim caries foedis enata pudendis
> Hinc atque hinc invicta locos, aut inguen edebat,
> Tum manifesta magis vitii se prodere signa.

In the second canto is told the story of Ilceus, a young hunter, who, attacked by the disease, quickly loses his radiant health and strength. He cries aloud for aid, and the Nymph Lipare takes him into her subterranean grotto, and there bathes him in liquid silver (i. e., mercury), whereupon he steadily recovers his health.

As was seen by Fracastoro's contemporaries, this myth is a conscious imitation of that of Aristaeus in the fourth book of Vergil's Georgics (8).

So far the word syphilis is wanting, but it appears in the third canto. This canto describes the voyage of an explorer (9) to a New World theretofore wholly unknown to Europeans. The sailors slay some of the sacred birds of the Sun god, and are cursed by one of the persecuted birds, which uttered terrible threats with an imprecation of punishment, distracted wandering, dissension, and a new and fearful disease. So far the myth follows the Odyssey of Homer—the sailors in the Odyssey are warned against interference with the herd of the Sun, which "increases not nor diminishes"; notwithstanding the solemn warning, "through the blindness of their own hearts they perished, poor fools, who devoured the oxen of Hyperion Helios, and the god took from them the day of their homecoming," all but the wise Ulysses, who lay sleeping and abstained from the sacrilege; he alone of all the band came home to Hellas (10).

To this extent the artificial myth of Fracastoro fits in with his original, but now there is a wide divergence—one would expect an immediate stroke by the sun, but that would not agree with Fracastoro's etiology.

The New World seekers landed upon an island called Ophire (11) and entered into friendly relations with its inhabitants. At a solemn feast in honor of the Sun god the newcomers saw many men afflicted with this strange disease, who laid upon the altar of the god offerings of sacrifice to mitigate and avert his anger. The newcomers were informed by the venerable chief that the disease had been sent by the Sun god, Apollo (12). Many years before, a king, Alcithous by name, reigned in the Island—his herdsman, Syphilus, one day resented the hot waves of the sun, thinking them but an ill return for the sacrifices offered up so freely; he consequently repudiated the service of the god and set up the king as his divinity. He scoffed at the poverty of the celestial god who had but one ram, one bull, one dog (13), as compared with the wealth of Alcithous, who had immense flocks and herds; he succeeded in drawing the whole people into the same sacrilege. Apollo was swift to anger as among the Greeks of Homer: he speedily sent a fearful plague which attacked first the herdsman, then the king (14) and his people, and was called Syphilis, the first time the dread word was spoken by mortal lips.

All hope was not gone; the Nymph Ammerice promised her aid if the sinners should repent, desert their sin, return to their former reverence and bring sacrifices to the old gods. This they did, and forthwith, like Jonah's gourd, there sprang up a new and hitherto unknown tree, guaiacum, with its healing wood.

It might be expected that the story would proceed that the newcomers became infected with the disease, and took it back with them to Europe; but that would not fit in with the origin as given in the first canto—a cosmic cause, a fatal conjunction of the stars, which had the same effect the world over. Accordingly we find that the astounding news is brought to the voyagers by new ships arriving from Europe that the disease had broken out there also. The chronology limps—the outbreak in Ophire had been many years before—but we must not ask too much consistency in a poet, especially when he is contriving a myth, artificial and conscious, in competition with the unconscious and natural creation of the ancients.

The purpose of the whole poem seems to be, and that of the third canto certainly is, to promote the use of guaiacum as a remedy for syphilis. No words of praise are too warm for the divine wood.

> Salve magna Deûm manibus sata semine sacro,
> Pulchra comis, spectata novis virtutibus arbos:
> Spes hominum, externi decus et nova gloria mundi (15).

Thus far, there is no difficulty; but we are still but at the threshold of the inquiry as to the ultimate derivation of the word syphilis.

Many guesses have been made—some who did not know of Fracastoro's herd derived the word from *sus* and *phileo,* two Greek words meaning a sow and I love—as indicating that the disease came from unnatural intercourse with a sow. Even when Fracastoro's work became known the same derivation was given for the name of the herdsman as indicating his love for swine (16). Other derived the word with more or less plausibility from the Greek words *sun,* with, and *phileo,* I love—this is equally untenable (17).

The matter was first put on a satisfactory footing by Dr. Franz Boll, of Heidelberg, in 1910. His first proposition is that at first Fracastoro intended to call his work *Syphilis,* i. e., "the story of Syphilus" on the analogy of Aeneis, the story of Aeneas, Achilleis, the story of Achilles, Thebais, etc., that having written the title *Syphilidis seu Morbi Gallici libri tres,* the very conjunction of the two genitives induced him to make one the equivalent of the other and thereby name the disease itself syphilis. Whether this be likely or not will be a matter of opinion (19), but in any event this hypothesis has no effect upon the argument for the derivation which Poll advances.

He rightly rejects the theory of Walter Pflug, deriving the word from the Arabic *Sifle, Sufle* meaning lower. Fracastoro drew such inspiration as he had from Latin authors, and was of the fine flower of the Rennaissance; he had nothing in common with Arabian lore or literature (21).

Leaving aside Ammerice, the derivation of which is obvious, Ophire scarcely less so, and Atlas (the great progenitor of the Island people who will be spoken of later in this paper), only two proper names occur in the third canto, namely, Alcithous, the name of the king, and Syphilus, the name of the herdsman. Alcithous is to my mind certainly from Alcithoe, the Nymph of Ovid's verses:

> At non Alcethoe Minyeias orgia censet
> Accipienda Dei: sed adhuc temeraria Bacchum
> Progeniem negat esse Jovis: sociasque sorores
> Impietatis habet (22).

She for her impiety was changed into a bat (23).

Boll prefers (I do not agree with him) to take the name from King Alcathous, son of Pelops and founder of Megara, spoken of by both Ovid and Vergil (24). However that may be, the other proper names in Fracastoro's poem are taken from the Latin poets, for Ilceus in the second canto can be nothing else than Vergil's and Ovid's Hyleus (or Hylæus) (25), the Arcadian Centaur who offered violence to Atlanta and was shot down by her. It is therefore natural that the original of the name of the herdsman, Syphilus, should be found in the ancient poets—and Boll's great triumph is to have found it.

Sipylus was the mountain on the frontier of Lydia and Phrygia from which came the unfortunate Niobe, and on which she sits, turned into stone —and Sipylus was the name of one of her sons (26). Niobe was called after her place of origin genetrix Sipylea (27).

The story of Niobe is well known—in the pride of wealth and station she boasted of her wealth and status; with pride of her motherhood she boasted of her seven sons and seven daughters, and deemed herself superior to Leto, who had been buffeted from land to land, from sea to sea, until the floating island of Delos gave her a place in which to bring forth her young, and there she had borne but two children, Apollo and Artemis. These two children of Leto—Sungods, be it remembered—took vengeance for the insult and slew the fourteen; the unhappy mother was carried to Mount Sipylus, was metamorphosed into stone, and there weeps forever the misfortune with which the angry gods visited her.

Fracastoro's herdsman, too, compared the wealth of earth with the poverty of heaven, and was punished by the Sungod; and it would be most natural that he should receive a name reminiscent of the story of Niobe, his prototype, of whose story his was a conscious imitation.

Sipylus, the mountain from which Niobe came and on which she forever weeps, gave its name to her second son—and what more natural than that the new blasphemer should receive the same name?

To make the identification the more strong, Boll, in his second article, points out that in some manuscripts Sipylus for both mountain and man is written Siphylus (28).

An argument of persuasive force to a classical scholar is to be found in the quantity of the antepenult. In compounds of *sus* in Greek, the *u* (of course, *y* in Latin) is short as in *subosion,* a herd of swine, *subotes,* a swineherd—and in all but the nominative case the *u* is short in the noun itself. In Sipylus (Siphylus) the first syllable is long, and Fracastoro makes the first syllable of Syphilus long also. This cannot be a mere coincidence; he was exceedingly careful of his quantities at all times. Indeed, the celebrated Sannazarius, from reading this poem, declared that he thought it superior to anything produced by himself or his contemporaries.

So far I have followed in the main the argument of Boll—the quotations are my own—he does not elaborate the argument based upon quantity.

But, as it seems to me, he misses another strong argument—the inhabitants of the Island Ophire have Atlas as their great progenitor; it was one of the boasts of Niobe that Atlas was her grandfather,

> . . . maximus Atlas
> Est avus aetherium qui fert cervicibus axem (29).

That Syphilus was named after the mountain home and the second son of "Niobe, all tears," can now be taken as certain (30).

OSGOODE HALL.

NOTES.

1. I have reread Aristophanes, Horace, Ovid, Juvenal, Catullus, and other Greek and Roman authors with the purpose of detecting any trace or indication of the existence of this plague in antiquity, and I have found nothing even to suggest that it was known in those times. There is, indeed, much in Aristophanes that the editors ignore or fail to appreciate, that no one but a psychopathologist can appreciate and a complete and adequately annotated edition of his comedies would startle the world if it could find a publisher, which is doubtful.

A most powerful if amusing argument on this subject is to be found in a work by the Advocate Linguet, *le fecund et turbulent Simon-Henri-Nicolas Linguet* in 1766, and reprinted at Cologne (*i. e.,* at Paris) in 1797, during the French Revolution, *La Cacomonade.* No candid and competent reader can, I think, resist the reasoning and conclusion of von Notthafft in his *Die Legende von der Altertums-Syphilis* (Leipsic, 1907) that syphilis did not exist in the Ancient and Mediaeval World. One of my copies of *La Cacomonade* purports to be printed at Cologne, 1756, but it is a reprint—certainly dating after 1850—Linguet was only twenty years of age in 1756; my other copy is the highly prized second edition of 1797. This book does not appear in the list of Linguet's works in the—in other respects satisfactory—life in Chalmens's *Biographical Dictionary,* vol. xx, pp. 290 sqq. The second edition is said to have been due to *Mercier de Compiègne libraire peu intelligent et litterateur des plus mediocres,* but it is a creditable production.

2. Of course, I am not ignorant of Job's afflictions or of David's trouble with his bones and the loathsome disease in his loins, but how these can be considered symptomatic, much less pathognomonic, of syphilis without other more serious symptoms, passes my comprehension.

3. I have no doubt of the fact that it is possible that one should hesitate dogmatically to decide "*sei sie . . . ein verhaengnisvolles Geschenk der neuen Welt an die alte oder aus anderen unbekannten Gruenden erwachsen*" (Franz Boll, quoted later in the text).

4. In Iwan Bloch's well known work, *Der Ursprung der Syphilis* (Jena, 1901), a simple list of names alone fills eighteen pages—pp. 297-315.

5. The practically universal use of the word is largely due to Francois Boissier de la Croix de Sauvages (1706-1767), the father of Nosology, in his system of diseases, ten classes, 295 genera and 2,400 species; his smaller book, *Nouvelles Classes des Maladies,* 1732, was enlarged and systematized in his *Nosologica Methodica, &c.,* 1763, which contained his full system. Probably he was the only man who ever selected for his Doctoral Thesis the question *"Si l'amour peut être gueri par les remèdes tirés des plantes."*

6. Fracastoro (or Fracastorio) was born at Verona in 1483. He is said to have been born with his lips so closely adherent that they had to be separated by the surgeon's knife and to have escaped injury when a flash of lightning killed his mother, holding him a mere infant in her lap. He became a splendid Latin scholar and poet; the celebrated Julius Cæsar Scaliger said that he was the best poet after Vergil alone in the world. He was a physician, philosopher, mathematician, astronomer, all of the first rank, and was intimate with Scaliger, Cardinal Pietro Bembo, and others of note of his time. He published many productions both as a poet and as a physician; he practised without fee and published comparatively little of what he wrote. His complete works were published at Venice, 1574, and at Padua, 1735. The edition of his *Syphilidis, &c.,* used by Barthélemy (see note 7 post), was published at Leipsic, 1830. His most celebrated work is *Syphilidis seu morbi Gallici libri tres* sometimes called *Syphilis seu de Morbbo Gallico,* mentioned in the text. This was written, at least in substance, as early as 1521, but was, at Cardinal Bembo's suggestion, revised; and it appeared at Verona in 1530. There have been many versions in French and Italian. Nahum Tate produced an English translation in 1686, *Syphilis, or a Poetical History of the French Disease.* The verse of the original is dactylic hexameter, the quantity unexceptionable, the language pure; if any fault can be found it is in the caesura, which is not, *me judice,* quite up to Vergil's high standard. That, however, is rather a matter of taste; while one of the strongest arguments for the conclusion in the text is the exactitude of his quantities.

7. "It does not immediately make itself manifest, but lurks hidden for a time and little by little eats up the powers of the body; in the meantime those afflicted, languid and weighed down by unaccustomed torpor, go to their daily tasks without energy and are sluggish throughout the whole body. The eye itself loses its sparkle and the face loses its color under the sad forehead. Little by little caries originating in the foul pudenda without check eats into the various parts of the body or the thigh—the symptoms of the disease are now manifest." The translation is free. The only word to which even a purist could object in the above is *delitet,* it is unusual, indeed, but is found once in Pliny.

Auguste Marseille Barthélemy, the well known French satirical poet whose fame has perhaps suffered eclipse in these latter days, published a little known work, *Syphilis Poëme en quatre Chants.* Himself a translator of Vergil, he had been struck with the pure Latinity of Fracastoro's work, *"qui me semblait refusée aux auteurs modernes, et j'ose le dire, une foule de beautés empreintes d'une poésie antique et toute virgilienne."* (May I venture to express my concurrence in this expert opinion?) At first Barthélemy intended to translate the work, but finally decided *"d'actualiser la matière et de creer moi-meme . . . non seulement une œuvre de poésie, mais une œuvre de morale et d'utilité publique."* His poem already mentioned was the result. My own copy was published by Martinon at Paris, 1851, and has notes by Dr. Girandeau de Saint Germain:

> Il se cache, il hésite, il couve sourdement,
> Et semble en notre sein prendre son aliment
> Cependant le malade en proie à ses atteintes.
> Sous un poids inconnu sent ses forces éteintes
> Une torpeur de plomb s'appesantit sur lui
> Aux travaux journaliers il vaque avec ennui
> Les symptômes facheux ne tardent pas d'eclore
> L'oeil perd de son éclat, le front se decolore
> La hideuse carie, étendant ses progrès
> Porte sa lime sourde aux organes secrets
> Ronge les lieux voisins et s'etend jusqu' aux aines
> Le mal n'est plus douteux, ses marques sont certaines

Barthélemy's own description does justice even to

> *"ce mal impur (qui) dés le berceau des ages,*
> *Ait sur le genre humain promené ses ravages,"*

by which

> "vengeant sur nous sa liberté mourante,
> L'Amerique ait conquis l'Europe conquerante;"

Here is a sample:

> Que l'amour vienne donc contempler ces ruines.
> Ces noires cavités en place de narines,
> Ces lèvres que laboure un sulfu reux sillon,
> Cette langue épaissie en forme de bâillon
> Ce front illuminê de pustules grossières
> Ces paupières sans yeux et ces yeux sans paupières
> Désespérants tableaux dont la realité
> S'imprime tellement dans l'oeil épouvanté
> Que leur souvenir seul, leur image ternie
> En passant devant nous dans des nuits d'insomnie
> Leur simulacre en cire, ou leur pâle dessin
> Héris sent nos cheveux et glacent notre sein.

The frontispiece is an appalling picture of a young man in the height of strength and health making love to a masked woman, the mask all youth, health and beauty, but behind, a grinning skull with hollow eyesockets and rotten nose.

In a very interesting and amusing work in two volumes, *La Médecins et Les Médecine,* by Louis Piesse, Paris, 1857; the learned, versatile, and brilliant author (not a medical man, be it said) in Vol. II, discussing Medicoliterature gives an account of *un poëme medical* by Dr. Andreveton in which the poet calls blenorrhagia, *"le flux de Cypris"* and describes *"les altérations syphilitiques en bourgeons, en fleurs, en fruits et en rameaux, et dans un cas bien caractérisé chez femme."*

> *Contemplant de son sein les abords et l'entrée,*
> *Il voit en espalier l'arbre de Cythérée.*

Peisse considers it natural that doctors should write poetry, for "it is notorious that Aesculapius was the son of Apollo and that filiation determines the kinship of poesy and the healing art."

He speaks of the first medical poet Nicander who wrote in Greek on the *theriaca* and the *alexipharmaca;* Emilius Macer who wrote Latin hexameters on antidotes; Rupert of Ephesus who discussed materia medica in hexameters; Quintus Serenus Samonicus, Marcellus surnamed Empiricus, all blessed—or afflicted—with the divine frenzy; John of Milan who celebrated the oracles of the famous School of Salerno; Nostradamus who gave us his Centuries; Julius Caesar Scaliger, unequalled critic and commentator as well as poet; Silvius (Jacques Dubois) of Amiens, the redoubtable adversary of Vesalius; Meibomius (Heinrich, not Johann Heinrich) who discovered the *glandulæ Meibomii* of the eye and many other French, English, Scottish, German, Italian—of Fracastoro, Piesse says:

> Mais la gloire de ces versificateurs et de mille autres de même force s'eclipse devant la respendisante auréole de Jérôme Fracastor, de tous les poëtes latinseurs modernes *facile princeps.* Ainsi l'ont décidé les connaisseurs, et nommément Scaliger qui, transporté d'enthousiasme à la lecture de *Syphilis,* composa en son honneur un poëme intitulé *Aræ fracastoreae.* Quelques critiques lui ont opposé Sannazar, d'autres Vida. Nous devons, nous médecins, tenir *mordicus* pour Fracastor, d'autant que nous pouvons aujourd'hui le lire couramment, traduit en beaux alexandrins francais par Barthélemy.

Peisse probably never saw the original Latin of Fracastoro; he certainly never compared it with Barthélemy's work—or he could not have said that the latter was a translation of the former. What Barthélemy did was *actualiser* (the word is unknown to Littre) the material, that is, set out in terms of actuality and describe in Alexandrines of such undoubted beauty as was to be expected from such a writer.

8. *Vergil's Georgics,* Book 4, Vv. 315-558. Aristaeus, the father of bee culture, loses his bees by disease; he cries upon his mother Cyrene sitting in her underground chamber *"ad extremi sacrum caput. . . . amnis,"* she hears him, takes him to her chamber and puts him in the way of recovering his loss. The story is probably from the Greek, but there can be no certainty as to its origin. See Conington's *P. Vergili Maronis Opera,* London, 1881, Vol. I, pp. 338, 378-407 and notes.

9. The name of Columbus is not mentioned, but there is no doubt that his voyage of discovery is indicated.

10. The words quoted are a translation of *Odyssey,* I, vv. 7-9; the warning is *Odyssey* XI, vv. 112-113; XII, vv. 137-141: "if thou hurtest them, I prophesy ruin for thy ship and for thy men"; the men refrained from the kine until "hunger gnawed at their belly" and then slew the best of them and ate the flesh, Ulysses being asleep—this on the Island of Thrinakia. All dismally perished but Ulysses; *Odyssey,* XII, vv. 405-453. The seven herds of kine, fifty in each flock "who increased not nor diminished" were long ago identified by mythologists as the 350 days of the original year.

11. No doubt from the ancient Ophir—variously placed

by scholars in the north of Asia, India, Malacca and America; perhaps Fracastoro by the use of the word in this connection indicated his concurrence in the view that America was the true Ophir; thousands of his countrymen in later years have found it so.

12. Everyone will remember the beginning of the first book of the *Iliad* where Apollo, angered by an insult to his priest and his temple, sends shaft after shaft upon the camp of the Greek, "terrible was the clang of his silver bow" and "the people kept dying." This has always been recognized as a poetical description of an epidemic, perhaps typhus.

13. Of course the constellations Aries and Taurus and the Dogstar, Sirius.

14. It is fatal for any king to listen with assent and approval to the cry of his people. "It is the voice of a god and not of a man," Herod found it so in his day—Acts XII, 21-23—and some are finding it so today.

15. "All hail, great tree planted by the hands of the gods from seed divine, beautiful in foliage, glorified by new virtues; hope of mankind, distinguished ornament and new glory from the land of the stranger." Guaiacum is said to have been introduced into Italy in 1517; Ulrich Von Hutter had called it a divine gift in his *De Guaiaci Medicina et Morbo Gallico liber unus*, Moguntiae, 1519 (Fracastoro calls it hyacus and huyacus). Thomas Paynell's (Chaplain to Henry VIII) translation of von Hutten's work, 1533, contains the first mention of this medicinal wood in English—the distinction between the *guaiacum officinale* and the *guaiacum sacrum* came much later.

16. This is what I was taught less than half a century ago—and I am not ashamed to say that I retained this view until after I had been, much to my own astonishment, elected President of the Canadian National Council for Combating Venereal Disease, when my attention was called more particularly to syphilis; indeed I find I have given its derivation in a comparatively recent paper, written in substance, however, some time ago. Franz Boll's article came to my attention, fortuitously, some months ago. I find it, however, referred to in Murray's New English Dictionary, sub. voc. Syphilis.

17. If from *sus* and *phileo* the word should be *suophilis;* if from *sun* and *phileo,* it should be *symphilis*—this is not conclusive, for have we not the word telegram instead of the regularly formed telegrapheme? And what of the monstrosities, cablegram and marconigram, which make a decent etymologist's hair stand on end?

18. First published as an article, *Der Ursprung des Wortes Syphilis: Eine Quellenuntersuchung* in *New Jahrbuecher fuer das Klassiche Alterthum Geschichte* for 1910, pp. 72-77, and a second article, *Zum Ursprung des Wortes Syphilis,* in the same volume, p. 168.

Much of what follows is taken from these articles which are not available for examination to most medical men—and who could have expected to find this subject in such a journal? I am wholly responsible for the quotations, translations, etc.

19. My own opinion (for what it is worth) is against the proposition, but there is no evidence and one guess may be as good as another.

20. *Der Kaiserliche Regierungsrat,* Walter Pflug, *Syphilis oder Morbus Gallicus, eine Etymologische Betrachtung,* Strassburg, 1907, a learned but unsatisfying book.

21. His many medical works are all in Latin, as are his *De Anima Dialogus, De Poetica, de Intellectione,* etc.

22. "But Alcithoe, the daughter of Minyas, refused to join in the orgies of the god (Bacchus). She rashly denied that Bacchus was the son of Jove and she had sisters of like impiety." Ovid, Metamorphoses, Lib. IV, vv. 1-4.

23.

. . . Adhuc Minveia proles
Urget opus spernit Deum festumque profanat
Tympana cum subito non apparentia raucis
Obstrepuere sonis, et adunco tibia cornu
Tinnulaque sonant. . . .
Fumida jamdudum latitant per tecta sorores
Diversaeque locis ignes ac lumina vitant
Dumque petunt latebras; parvos membrana per artus
Porrigitur tenuique inducit brachia penna
Nec qua perdiderint veterem ratione figuram
Scire sinunt tenebrae. Non illas pluma levavit.
Sustinere tamen se perlucentibus alis
Conataeque loqui, minimam pro corpore vocem.
Emittunt; peraguntque levi stridore querelas.
Tectaque, non sylvas, celebrant: lucemque perosae
Nocte volant; seroque trahunt a vespere nomen.

Ovid, Metamorphoses, Lib. IV, vv. 389-393:405-415.

"The daughter of Minyas kept on contemning the god and profaning his festival—when suddenly unseen wings rustled with harsh noise, and flute and tinkling cymbal sounded along with the curved horn . . . and now the sisters hide in the smoke filled room, scattering, they flee the fire and the light. Then they seek hiding places, membranes form between their slender limbs and overspread their arms with tenuous wing—the darkness allows not to see how they lose their former figure; no feather bears them up, yet they fly on transparent wings. Trying hard to speak, they utter but the slightest sound compared with the size of their bodies; they squeak out their lament, roofs not woods they frequent, hating the light they fly by night, and in aftertimes they take their name from the eventide." (*Vespertilio,* the Latin word for bat, is derived from vesper, the evening, and means the creature which flies in the evening.)

24. Ovid, Metamorphoses, Lib. VIII, v. 8; Vergil, Ciris, vv. 105, 106.

"Stat Megara Actaei quondam munita labore
Alcathoae Phoebique; deus namque adfuit illi."

"There stands Megara, built by the labor of Actaeus, Alcathous and Apollo—for the god was present assisting him." It does not appear that Alcathous was ever blasphemous or aught but devoted to and beloved by the god—he was fortunate all his life and had games dedicated to his memory after death; we have seen the sin and the fate of Alcithoe.

25. Vergil, Aeneid, Lib. VIII, vv. 293-4.

". . . Tu nubigens, invicta, bimembris.
Hylaeum Pholumque, manu, tu Cresis mactas."

"Thou the cloudborn Centaur slayest Hylaeus and Pholus." Ovid, Metamorphoses, Lib. VIII, vv. 7, 8, speaks of *urbe Alcathoi.*

26. The whole story of Niobe is familiar to all. Ovid's description has in my opinion never been excelled in vigor or tragic beauty:

Ecce venit comitum Niobe celeberrima turba
Vestibus intexto Phrygiis spectabilis auro
Et. quantum ira sinit formosa. . . .
. . . Aut cur colitur Latona per aras
Numen adhuc sine thure meum est? Mihi Tantalus auctor
Cui licuit soli Superorum tangere mensas
Pleiadum soror est genitrix mihi: maximus Atlas
Est avus, aethereum qui fert cervicibus axem:
Jupiter alter avus: socero quoque glorior illo.
Me gentes metuunt Phrygiae: me regia Cadmi
Sub domina est: fidibusque mei commissa mariti
Moenia cum populis a meque viroque reguntur.
In quamcumque domus adverto lumina partem,
Immensae spectantur opes. Accedt eodem
Digna Deae facies. Huc natas adjice septem,
Et totidum juvenes; et mox generosque nurusque.
Quaerite nunc, habeat quam nostra superbia causam:
Nescio quoque audete satam Titanida Coeo
Latonam praeferre mihi; cui maxima quondam
Exiguam sedem pariturae terra negavit.
Nec coelo, nec humo, nec aquis Dea vestra recepta est.
Exul erat mundi; donec miserata vagantem,
Hospita tu terris erras, ego, dixit, in undis,
Instabilemque locum Delos dedit. Illa duobus
Facta parens: uteri pars est haec septima nostri
Sum felix: quis enim neget hoc? felixque manebo.
Hoc quoque quis dubitet? tutam me copia fecit.
Major sum, quam cui possit Fortuna nocere.
Multaque ut eripiat; multo mihi plura relinquet.
Excessere metum mea jam bona. Fingite demi
Huic aliquid populo natorum posse meorum.
Non tamen ad numerum redigar spoliata duorum
Latonae:

Ovid, Metamorphoses, Lib vi, vv 165-167; 175-200.

"See, here comes Niobe with shining gold interwoven in Phrygian robes, surrounded by her glittering court of followers and beautiful—yes, beautiful as anger permits. . . . Why is Latona honored at the altar and mine is without incense? My father is Tantalus, the only mortal permitted to sit at the table of the gods, (Taygete) one of the sister Pleiades, my mother—the mighty Atlas is my grandfather, who carries on his shoulder the vault of heaven. Jupiter is my other grandfather and I the more illustrious than he is my father-in-law. Before me the Phrygian people tremble—the Kingdom of Cadmus is mine—the walls constructed by my husband's lyre are governed by me and my husband with their people. Into whatever corner of my house I turn my eyes, they see enormous treasures—in face and form, I am worthy of being a goddess. To all these add my seven daughters, my seven sons—soon, too, sons- and daughters-in-law. Ask now what cause I had for pride. I know not how ye dare prefer this Latona, daughter of some Coeus or other, to me. Latona whom once upon a time the whole earth refused even a little spot for her to give birth to a child—neither heaven nor earth nor sea would receive your goddess. She was an outcast of the world, until at last, commiserating the wandering one, Delos said: 'Thou art a vagrant and a stranger on the land, I in the waters,' and gave her her restless soil for a resting place. She has brought forth two children—this girl is the seventh offspring of my womb. I am blessed, who may deny it? And blessed I shall remain—who can doubt it? My very numbers will keep me secure. I am beyond the reach of Fortune to injure. Let her take away many, far more will remain to me; my wealth places me above fear. Even supposing something should take away the half from the multitude of my children—not then, despoiled as I would be, would I be reduced to the number—the two—of this Latona."

And the punishment was swift. Leto might have imitated the Queen of Beasts who, when jibed at by the prolific rabbit, because she bore only two children, said: "Yes, but they are lions." Leto was too small minded for such a magnanimous part—she called to her children, Phoebus Apollo and Phoebe Artemis, and they slew one by one the seven sons and seven daughters, the pride and boast of the blaspheming daughter of Tantallus. Ismenus first, Niobe's eldest son,

Ei mihi! conclamat, medioque in pectore fixa
Tela gerit fraenisque manu moriente remissis
In latus a dextro paulatim defluit armo vv. 227-9

Ah me! he cried, the dart transfixing his breast, the slackened
Reins dropping from the dying hand he slowly falls from the right side of his steed.
Then the second son Sipylus,

. . . summaque tremens cervice sagitta
Haesit, et exstabat nudum de gutture ferrum vv. 235-6

The arrow stood trembling in the upper part of the neck and the naked iron protruded from the throat
Phaedimus, Tantalus, Alphenor, Damasichthon, Ilioneus
All met the same fate and six daughters followed them to death

Ultima restabat; quam toto corpore mater
Tota veste tegens 'Unam, minimamque, relinque
De multis minimam posco,' clamavit, 'et unam.'
Dumque rogat; pro qua rogat, occidit. vv. 297-301

But one, the last remained—her the mother hid under her robe and cried 'Leave me one, the littlest one—out of so many I ask only one only the very littlest one—and while she prayed she for whom she prayed was slain.
The mother moved no hair, bloodless she sat, without motion or life.

Flet tamen et validi circumdata turbine venti
In patriam rapta est: ubi fixa cacumine montis
Liquitur, et lacrymas etiam nunc marmora manant. vv. 310-312.

Yet she weeps and wrapped round by the whirlwind,
She is carried to her fatherland. Here fixed on the peak of the mountain she ever sits weeping and to this day the rock flows down in tears.

27. Statius, Silvae V, 1, 33; also *Sipylein cautes,* Ansonius, Epitaphia, 27.

28. Ovid, Metamorphoses, Lib. VI, v. 149, the mountain, v. 231, the son. See references in Boll's second Article, p. 168.

29. Ovid, Metamorphoses, Lib. VI, vv. 174-5; see note 26, *supra.*

30. At a public meeting in Toronto called a short time ago by the Canadian National Council for Combating Venereal Diseases, after speaking of the origin of the word syphilis, I said:

"When we hear the word syphilis let us think of Niobe weeping for her children. The very origin of the name of the disease should make us think whenever we hear it that we must see to it that, so far as we can prevent, mothers shall not weep for their children. Niobe cannot recall hers from death, they cannot return; but may we not prevent the like fearful calamity to mothers of our own times and of succeeding generations? That is our task—God help us to perform it successfully.

"It is no holiday pastime, no undertaking to be embarked on lightly; to meet the hideous syphilis and her worthy sister needs all our powers of body and mind, all our resources, social and financial.

"Some sixteen centuries after Ovid had written his elegant Metamorphoses, another poet in Italy, less celebrated but equally gifted, gave to the light a work in Latin equally good or better. He also wrote myths, but his were artificial, his own manufacture, not like those of Ovid, the traditional folklore of the race and largely a poetical interpretation of natural phenomena. Hieronomo Fracastoro, of Verona, a Latin poet inferior only to Vergil (if to him), a great physician who gave his services free to all who sought and needed them, a mathematician, an astronomer, published in 1530 his celebrated book in Latin hexameter descriptive of the disease which had made its appearance in Europe just a generation before (1497).

"Of the three books or cantos of this poem we may pass over the first which describes the symptoms and the second which tells the story of a young hunter who was cured by bathing in liquid silver—of course mercury—on the prescription of a pitying Nymph. In the third canto we meet the real story—in a voyage of exploration the sailors kill some of the sacred birds of the Sungod and are threatened with discord and a new and fearful disease. Making in the New World the hitherto unknown Isle of Ophire, they learn from a venerable chieftain the cause of a disease which had afflicted the islanders. The shepherd of a former king of the isle, angry at the scorching heat of the sun, had renounced the worship of the Sungod and set up his king as his god; he boastingly compared the wealth of the earthly monarch with his countless flocks and herds and the poverty of the heavenly with his one Ram and Bull, just as Niobe had boastingly compared her earthly treasures and the poverty of Latona. The people were led astray and punishment swiftly followed—the Sungod smote with a new and strange disease, first the presumptuous shepherd, then the king who had allowed himself to be deified and the people who had followed the erring shepherd in blasphemy and sin.

"Seeking a name for the impiously vaunting shepherd, what could be more natural than to find it in the story of his prototype Niobe, whose story was consciously imitated by the Italian poet? Niobe sits forevermore melting in tears on Mount Siphlus (or Sipylus) and her second son, called after her paternal mountain home, fell pierced by Apollo's dart. Fracastoro, with true poetic genius and insight, called his shepherd Syphilus and Syphilis the disease inflicted for his impiety.

"Niobe weeping for her children! Nearly, if not quite, half of the surgical diseases on the female generative organs are caused by infection from the husband—many of these deprive the victim of the possibility of bearing a child—and she weeps her unborn children.

"Niobe weeping for her children! The young bride in the height of health and beauty receive the fatal marriage gift from him who has just sworn to love and cherish her—and she dies—her mother weeps her beloved dead.

"This is no figment of the imagination—not many weeks ago a mother came to me with a photograph of her young daughter, the picture of all that is winning, and told me the shocking story of honorable marriage dishonored by the infected husband who had won her hand with her virgin heart and had repaid with fatal disease. The law, you say? What can the law do towards giving back the dead to the living? Niobe—nay, in this case it was Rachel, for she was a Jewess —weeping for her children:

A voice was heard in Ramah,
Weeping and great mourning,
Rachel weeping for her children;
And she would not be comforted, because they are not.

"Niobe weeping for her children!

"Nearly, if not quite, one half of all the abortions and miscarriages are caused by syphilis.

"Niobe weeping for her children!

"Of those blind from birth four out of five have perfect organs of sight but are blinded by venereal disease in the mother—one tenth of all blindness comes from this cause. You women, you good women, you devoted women, who are so deeply interested in the blind, who sacrifice your time and money, your ease and comfort, that you may alleviate their bitter lot a little, will you not help us to prevent the utterly unnecessary increase in their number?

"Niobe weeping for her children!

"Venereal disease is one of the chief causes of the mentally defective, the idiot, the imbecile, what is strangely and cruelly called the natural; it causes most of the fits, apoplexy and paralysis of children.

"Niobe weeping for her children!

"Not far from one third of all insanity, nearly, if not quite, all locomotor ataxia, much of the softening of the brain, the disease of the heart and arteries are the work of the same enemies of mankind.

"Elizabeth Barrett Browning many years ago appealed to the conscience of England for the child in the factory.

"'Do you hear the children calling, O my brothers?' and the great heart of England answered. Does Canada hear the cry of her children? And if she hears, what is her answer?"

I subjoin here the derivations from the Dictionaries under my hand:

1874. Dunglison's *Medical Dictionary* (which I consulted as a student of medicine). The etymology is uncertain. Some consider it to proceed from *sus,* a hog, and *phileo,* I love; others *sun,* with, and *phileo,* I love; and others with more probability from *siphlos,* formed by contraction from *sipalos,* a reproach. As to the last derivation *siphalos* is an adjective not a noun and means crippled, maimed, defective, purblind, etc. (*siphlos* seems to be the poetic form. See Liddell & Scott's Greek Lexicon sub. voc.). The quantity of the first syllable which is short excludes the word as the original of syphilus.

1872. Worcester's *Unabridged* follows and quotes Dunglison.

1891. *The Standard Dictionary,* "from *syphilus,* a fanciful name having a Greek aspect but no actual Greek basis. If either of the usual conjectures is correct, it should be either *symphilus* (from *sus,* a hog, and *philos*)."

1911. Dorland's *American Illustrated Medical Dictionary.* "Latin, origin not certain."

1914. Webster's *New International.* French and Neo-Latin, from Syphilus, the name of a shepherd in the Latin poem of Fracastorio. *Syphilis seu morbus Gallicus,* which was published in 1530, perhaps from Greek *sus,* hog, and *philos,* dear, loving.

1914. Funk & Wagnall's *Standard Dictionary.* French, from Syphilus, the name of a shepherd in *Syphilis seu Morbus Gallicus,* a poem by Fracastorio, from Greek *sus* and *philos.*

Century. Neo-Latin, syphilis, a word introduced into technical use by Saubages from the name of a Latin poem by Hieronimo Fracastorio (Hieronymus Fracastorius), an Italian physician and poet (1483-1553), entitled *Syphilus sive Morbi Gallici libri tres* and published in 1530, the name being derived from that of Syphilus, a character in the poem. The name Syphilus is a fanciful one, having a Greek aspect but no actual Greek basis. If either of the usual conjectures is correct, it should be *symphilus,* from Greek *sun,* with, and *philos,* loving, fond (philein, love), or *syophilus* (a name appropriate for a swineherd), from *sus,* hog, and *philos,* loving (philein, love).

1919. Murray's *New English Dictionary.* Modern Latin, syphils (syphilidis), originally the title (in full *Syphilis sive Morbus Gallicus*) of a poem published 1530, by Girolamo Fracastoro (Hieronymus Fracastorius) (1483-1553), a physician, astronomer and poet of Verona but used as the name of the disease in the poem itself. The subject of the poem is the story of a shepherd, Syphilus, the first who suffered from the disease, the name syphilis being formed on the analogy of Aeneis, Thebais, etc. The term was employed systematically by Fracastoro in his treatise *De Contagione,* II, 11 (1546).

And it is added: The source of the name *Syphilus* is disputed; it has been suggested that it is a corrupt mediaeval form of Sipylus, the name of a son of Niobe (socalled after a mountain) in Ovid, Metam., VI, 146 ff. (See F. Boll in *Nene Jahr. f. d. klass, Altherthum,* 1910, XXV, 72 ff. 168.)

1848. Hooper's *Lexicon Medicum.* According to some, this word is derived from the name of a shepherd who fed the flocks of King Alcithous, and who insulted the sun, in vengeance of which the venereal disease was sent upon earth. Others derive it from *siphlos,* disgusting. Dr. Mason Good says that the term was probably invented by Fracastoro from the Greek *sun* and *phileo,* importing "mutual love," for such is the title by which he has designated his celebrated and very elegant poem on this very inelegant subject. (This last phrase is indicative of the attitude even of medical men a very few years ago toward syphilis! No one would say of the black death or the sweating sickness that it was a "very inelegant subject.")

Undescended Testicle in Inguinal Canal*

By JOHN J. GILBRIDE, A. M., M. D.,
Philadelphia.

A male patient, aged twenty-one, entered the hospital on account of what was diagnosed as a left inguinal hernia. For years he had complained of a slight pain in the left groin, which increased on exertion. On the night of February 28, 1921, after a hard day's work, the pain was so severe that he again consulted his physician, who referred him to the hospital for operation. He had been wearing a truss at intervals for a number of years. The mass never came down into the scrotum, neither did it appear to increase in size, nor had it ever been strangulated. At the time of the examination a mass about twice the size of an almond was found in the left inguinal canal. It could be pushed back and forth about one inch in the inguinal canal. It could not be forced backward into the abdomen or brought down into the scrotum. The inguinal rings were tight. There was no impulse on coughing. The scrotum was small, consisting of the right side only, which contained the right testicle. The patient denied lues. The family history was negative. On asking him whether he knew that he did not have a testicle on the left side, he said yes, that he had known it from the time he was about six years old. The patient was operated upon March 2, 1921. I asked the intern what was his diagnosis, but he would not commit himself to a diagnosis other than stating that "the inguinal rings were tight." There was no testicle in the left side of his scrotum, and the rings were tight. No evidence of the presence of a hernia, although hernia existed in about ninety per cent. of all cases of undescended testicle.

THE SCROTUM.

The scrotum develops from two lateral folds which unite in the median line and form a raphe. If this union is imperfect there will be a cleft in the median line. An infantile scrotum or a failure of one half of the scrotum to develop is due to lack of development of the testicles in the former, or to an undescended testicle in the latter. If one testicle remains in the abdomen while the other descends, the condition is called monorchism. Cryptorchism is the condition which exists when neither testicle descends. Sometimes the presence of the vaginal process can be demonstrated, in which the testicle can be slipped up and down for a short distance, as in this case, or the vaginal process may contain intestine or omentum (congenital hernia), or there may be a communication with the peritoneal cavity and contain fluid (hydrocele). The vaginal process may have been pushed up between the peritoneum and the transversalis fascia, preperitoneal hernia, or between the internal and external oblique muscles (properitoneal hernia).

---

*Presented at the clinic of Mercy Hospital, March 2, 1921.

The scrotum is the continuation of all the layers of the abdominal wall with the muscle fibres almost entirely absent. The dartos is representative of all the layers of the abdominal wall. In some cases the dartos does not descend below the symphisis, and the testicle may be carried on to the anterior abdominal wall or near the anterior superior spine if the ileum. In the same way the testicle may descend into the perineum, and cases have been recorded where the testicle descended through the crural canal. The testicle may be arrested in its descent, in the abdomen, at the internal ring, in the inguinal canal, or at the external ring, the external oblique not being carried forward, as we demonstrated in this case.

The descent of the testis is controlled by the gubernaculum testis, which is attached to the lower pole of the testis. The arrest of the testicle at any point constitutes an imperfectly descended testicle. The cause of the imperfect descent is unknown. Its departure into some of the nonscrotal fibres of the gubernaculum constitutes the ectopic testis.

TREATMENT.

If the patient is first seen after puberty, no operation is indicated unless there are annoying symptoms, such as pain, new growth, or hernia. While undescended testicles are in most instances atrophied, rudimentary and functionless, still in boys who have not reached the age of puberty castration should not be performed unless one suspects malignant change, as numerous observations show that an undescended testicle may develop and become functionally active, especially if it can be brought down into the scrotum before the period of puberty. Some years ago a woman brought her eight year old son to see me. The boy complained of severe pains in the right lower abdomen, which she thought might be appendicitis. Examination showed that he had a mass in the right inguinal canal. I slipped my fingers down, and on examining the scrotum found the right side of the scrotum empty, thereby making a diagnosis of undescended testicle. This testicle descended during the following few days, causing the boy much pain.

An undescended testicle is prone to attacks of acute inflammation, and is frequently the seat of malignant change—sarcoma in the young and carcinoma in those past the second decade of life.

OPERATION.

The anterior superior spine of the ileum and the symphysis pubis are located, and an incision is made about an inch above and parallel to Poupart's ligament. The superficial epigastric vessels are picked up and clamped before cutting. Here the aponeurosis of the external oblique muscle is seen with its pearly sheen. Cutting through here, we see the testicle in the inguinal canal. There is no hernia. The testicle is about a third its normal size. The cord is loosened, and, if possible, the testicle is brought down so it may be implanted in the scrotum. In dealing with an undescended testicle of this type, one of three things may be done: first, the testicle may be brought down into the scrotum after a pocket is made with the finger, the testicle fixed in the bottom of the scrotum; second, the testicle may be pushed back into the abdominal cavity; third, the testicle may be removed. I removed this testicle, as the cord was short and this would have made too much tension on it. Two sutures of chromic gut were introduced uniting the conjoined tendon to Poupart's ligament. The aponeurosis of the external oblique was closed over the canal, and then the skin wound closed with interrupted silkworm gut. The skin sutures were removed in eight days, and the patient allowed out of bed in two weeks.

Roentgen Diagnosis of Lesions of the Genitourinary Tract*

By LESTER LEVYN, M. D.,
Buffalo, N. Y.,
Röntgenologist, Buffalo Hospital Sisters of Charity; Erie County Hospital, and Memorial Hospital.

The principal reason for presenting this paper is to emphasize the value of the röntgen method of examination as a diagnostic aid in the elucidation of problems referable to the urogenital system. In the embryonic days of genitourinary radiography its aid was chiefly sought in establishing the presence or absence of calculi. Since then it has not only proved the most reliable agent in the diagnosis of renal lithiasis but has developed into one of the most dependable and efficient instruments in diagnosing many other conditions involving kidney, ureter and bladder. Prior to the utilization of the x ray for renal examination the wax tipped catheter was the only positive agent in the detection of stone and only in the hands of experts was this method of value. Guided alone by the findings of the catheter the surgeon of the preröntgen day often in operating removed a calculus and left one or more. At present, however, multiple stones if present are shown on the plate and therefore do not escape the surgeon.

The demonstration of renal calculi is generally a matter of comparative simplicity. With proper technic and satisfactory radiographs their presence is established in practically one hundred per cent. of cases. There are rare occasions when a certain amount of difficulty is encountered but with careful and experienced interpretation definite conclusions are possible.

Renal calculi vary greatly in size. They may be as large as the kidney itself, almost completely disorganizing the organ, while on the other hand they may be very small. A large stone may have several branches, appearing at first multiple, but close examination enables one to trace the shadows and prove that they constitute but one formation. Many times multiple stones are seen in a kidney. As a rule the large calculi do not produce marked symptoms. I have seen cases in which large stones were discovered incidental to examination of the gastrointestinal tract, the symptoms suggesting derangement of the digestive system. Those cases of lithiasis which present the classic colic, painful or suppressed micturition and hemorrhage are found to be due to small stones, causing the typical symptoms in their attempts to pass into the ureter. No examination is complete unless the entire urinary tract is studied. Probably the best method is to make a plate of each kidney area, one of each lumbar area, and one of the bladder. Unless this is done grave errors may occur.

---

*Read before the Luzerne County Medical Society, Wilkesbarre, Pa., November 5, 1919, in a symposium on Diagnosis and Treatment of Genitourinary Diseases.

Not infrequently symptoms may be confined to one side and the radiograph of the supposedly involved region is negative, whereas the opposite side is likely to reveal calculi. Both kidneys may be affected and possibly the ureters and bladder so that any omission in the examination may produce unfortunate results.

SHADOWS SIMULATING CALCULI.

It must be remembered that all shadows seen in the region of the urinary tract are not calculi. In my experience the most commonly met simulations are in order of their frequency as follows:

1. Intestinal contents. Unless the patient is thoroughly purged, small accumulations of fecal matter produce shadows which are not alone annoying in themselves, but may obscure the shadow of a calculus.

2. Fecaliths, as concretions in the appendix. The introduction of the opaque catheter is sufficient to differentiate a fecalith from a ureteral calculus.

3. Calcified mesenteric nodes. If these cause confusion reexamination at a subsequent time shows the nodes differently located. The most reliable distinction is obtained by pyelography or stereoscopic plates.

4. Calcification of rib cartilages. Generally it will be seen that the calcification is not confined to one, but is visible in several cartilages, likewise with calcified tips of the transverse processes of the lumbar vertebra, more than one tip presenting a similar appearance. Changing the position of the tube will also help in ruling out stones.

5. Remnants of medication, particularly bismuth, are likely to be confusing. It is therefore well to ascertain if the patient has been under medical treatment and, if an uncertain shadow in the colon is seen, it is advisable to cleanse the patient further. It is surprising how long a small residue of bismuth may remain in the colon and be the source of much annoyance. The pyelogram again is utilized in the differentiation.

Numerous other sources of uncertainty have been reported by various observers and there is probably no limit to the occurence of confusing shadows. The compilers of the *U. S. Army X Ray Manual* mention a number of possibilities to be borne in mind, chiefly among which are: Calcifications of portions of the ureter; sclerosis of the iliac arteries; calcifications of the vasa deferentia; calcifications at the bifurcation of the aorta; calcified blood clot in a carcinomatous kidney; warts and pigmented moles; scars of former operations, and adhesive plaster when tied in a knot.

It is of prime importance that we differentiate the renal from the gallbladder calculi, because of the not infrequent exploration of gallbladders for removal of calculi which are in the kidney. Generally the ringlike construction of the gallstone, and the different density and arrangement of stones if multiple, classify them as such. If great difficulty arises in separating the two, pyelography and stereoscopy will again place the guilt where it belongs.

Enlarged movable kidney is a condition one comes in contact with, from time to time, and may be accidentally discovered in fluoroscoping a patient. One or both kidneys are found to be freely movable and ptosed, and the extent can readily be determined by examination in the upright and recumbent positions, which palpation alone is not able to discern.

TUBERCULOSIS.

Renal tuberculosis is not as rare as is supposed and often radiography is the means of establishing the presence of such a lesion. When the plate reveals a kidney that is enlarged, tuberculosis should always be considered as a factor in producing the increased size. On the simple radiograph may be seen shadows produced by disintegration of portions of the kidney due to coalescence of caseous fields and even abscess formation is demonstrable. A kidney that presents a mottled appearance which is persistent is most likely the seat of tuberculous nephritis and the existence of small calcific deposits is confirmatory to such a diagnosis.

The pyelogram of a tuberculous kidney presents an interesting picture, the pelvis is enlarged, the apices of the calyces are dilated and roughened and the calyces and pelvis appear so separated as to eliminate the idea of any relationship between them. The minor calyces may be scarcely perceptible. The separation of the pelvis from the calyces is due to caseous degeneration. As the disease progresses, parts of the cortex become necrosed and appear as disseminated masses, or the masses unite and form a large cavity. The ureter too becomes dilated due to the extension of the process and if ulceration takes place and subsequent constriction it may become markedly dilated.

Many lesions involving the ureter are disclosed by pyelography, chiefly the obstructions caused by the presence of calculi, pressure of abdominal and pelvic tumors and tuberculous disease. At times one or both ureters are found to be greatly dilated which is as a rule due to ureteral stone or hypertrophied prostate. Just as a stomach may be the seat of ulceration and stricture or atony with dilatation, so is it possible for a ureter to be involved and ureteral dilatation result. Other rare conditions that the ureteropyelogram throws light upon are diverticuli, kinks and double ureter, which may be unilateral or bilateral. When dilatation of the ureters exists and in the absence of stricture or calculus, the cause will invariably be traced to the hypertrophied prostate.

Hydronephrosis appears on the pyelogram as a greatly enlarged pelvis, and the calyces also are very large, so much so as to obliterate the pointed branches by assuming large rounded forms. The calyces may even be obliterated. In hypernephrosis, the pelvis is deformed to varying extents and dilated, unless the growth involve the pelvis lumen and causes it to appear smaller in size.

TUMORS.

Neoplasms of the kidney are encountered not as infrequently as is supposed. Of the malignant type sarcoma and carcinoma are the chief offenders. The spindle and round celled sarcomas are met with in youths and adults, while the large tumors seen in infants and children are not likely pure sarcoma but consist of the mixed variety, the socalled teratoblastomas. Carcinoma of the kidney is of greater rarity than sarcoma. The carcinoma may be of the scirrhous or medullary type and may attain very large dimensions. The delineation of enlarged kidneys on the radiographic plate may be the first clue to direct the attention of the physician to the possibility of existing malignancy, and surgical procedure is largely influenced by the facts disclosed by the röntgenological findings.

Of the simple tumors the cystic type is most frequent. This may involve one or both kidneys and when bilateral is not likely congenital. Cysts may vary in size and may affect the kidney singly or in numbers. At times a mass of different sized cysts, ranging from very small to very large, may be present and cause the kidney to become tremendously enlarged. The ureter may be jointly affected by renal tumor, near or just below the ureteropelvic juncture and mechanical obstruction ensue.

The pyelogram gives infinitely more information than the simple plate method in arriving at a conclusion when enlargement of the kidney is seen. If neoplasm is present, the injected kidney presents typical changes. The tumor mass may produce a flattened appearance of the pelvis, or the pelvis may not be visible at all. Pressure may change the position of the pelvis. The deformities brought on by neoplasm are classified by Braasch as follows:

1. Retraction of one or more calyces.
2. Encroachment on the pelvic lumen causing:
   Flattening of the general pelvic outline; narrowing of the individual calyces; obliteration of the true pelvis.
3. Secondary necrosis.
4. Abnormal position of the renal pelvis.
5. Deformity of the ureteropelvic juncture.

In a paper as concise as this must necessarily be it is impossible to enter into detailed description of the complete röntgenological findings of the various lesions of the urinary tract. Only the important conditions which are likely to confront us in our daily routine have been mentioned and if I have but refreshed your memories on the subject I feel my purpose accomplished.

Difficulties Encountered in Prostatectomy*

These Observations Are Based on a Series of 209 Adenomatous Prostates Operated Upon by the Two Step Method with But One Death.

By JAMES A. GARDNER, M. D., F. A. C. S.,
Buffalo, N. Y.

In a most interesting review of the Evolution of Prostatic Surgery, Bugbee (1) divides the development into three steps: "First, the recognition of a pathological condition, and preliminarily crude attempts at the relief. The second step, viz., widespread experimental, the discovery of a pathological entity, the presentation of numerous operative procedures—some good, some bad—with various results. Fluctuations of opinion causing first a return to palliative measures, then to the more radical, but always with a trend forward with increasing better results, and the ultimate formations of a fundamental surgical foundation. The last or third step of crystallization, definitely placing the operative procedure in a realm of surgery, where it will stand as a logical and sound method of relief." He believes that the two step method is the ideal one for prostatectomy. Since Pilcher demonstrated in 1914 what he had done with the two step method, I have followed this procedure, and I believe it to be a sane and safe one. Since it is far the simplest method of prostatectomy, it has been used by beginners in surgery, which without doubt accounts for the mortality being relatively higher. The difficulties are few and with close attention to details they should be overcome.

One of the first difficulties encountered is in the recognition of the prostatic obstruction. Few of these sufferers remember when they first began to get up at night, and it is only when they commence to suffer from broken rest that they realize something is wrong. Examination by rectum often shows but a slight enlargement, and the physician is misled in believing there is no retention. The enlargement may be confined to the median lobe, and, therefore, be intravesicular. The use of a catheter will make the diagnosis whether there is residual urine. I think only in exceptional cases should operation be performed before thorough cystoscopic examination has been made personally by the operator. Any man presenting himself for prostatic operation is entitled to the benefit of every urological aid in diagnosis. If he has calculi in the bladder it is important to know the number, size, and whether they are held in a pouch or diverticulum. The diagnosis of a diverticulum should also be made before operation, because if the patient cannot empty his bladder afterwards and a diagnosis is then made, greater diplomacy is necessary to convince the patient that a second operation is required than if this necessity had been understood at the outset.

---

*Read by invitation before the Medical Association of Central New York, at Rochester, October 7, 1920.

To perform a prostatectomy when the bladder contains a carcinoma is, to say the least, poor surgery. One overlooks the most important pathological condition. If the tumor were a papilloma it would be impossible to remove the prostate without some of the fragments of the papilloma becoming implanted upon the fresh surface of the wound, thereby starting another tumor. If a cystoscopic examination had been made at first the growth could be removed by fulguration, so that at the time of prostatectomy there would be a clean bladder. Many factors in the case bearing importantly on the operation can be solved by the cystoscope. Stone, growth in the bladder or diverticulum should be diagnosed before operation.

It must be realized at once that these patients are not the rugged surgical risks they were thirty years ago—many of them consult the surgeon as a last resort, and are anemic, septic, and much debilitated. Uremia and damage to the kidneys is the most important difficulty with which we have to contend. Since this condition is not always easily recognized, many of these patients in the past did not survive the one step operation. They appeared fairly well, but they could not withstand the shock of the anesthetic and accompanying hemorhage. After preparation by frequent catheterizations, the indwelling catheter, or suprapubic cystotomy under local anesthesia, the back pressure on the kidneys having been relieved, they begin to improve. Often these men have worked out to their own satisfaction the scheme of drinking little to avoid distress from a distended bladder. This condition should be overcome by forcing fluids, bowel washes and sweat baths. As their general condition improves their functional tests will improve and they become safe surgical risks. The average time of preparation is about seven days, although some patients need a much longer time. If frequent catheterization has been used, the care of a skilled nurse or a physician at regular intervals is needed, for any trauma to the congested urethra is promptly resented. If the indwelling catheter is used, about three days is sufficient to set up a urethritis which to many patients is intolerable, to say nothing of the frequent complication of epididymitis. I have felt that a suprapubic drain put in the bladder under local anesthesia, which can be done with less pain than is often caused by catheterization, is the proper procedure. It gives ample drainage, needs less attention afterwards, and, at the time it is performed, the way is paved for the second operation.

One of the interesting features after the tube has been placed in the bladder, is the way the patient's sleep improves. "I have not slept so well in months," is a frequent greeting in the morning. The appetite and gastrointestinal symptoms improve. Patients are urged to get out of bed and walk around, which not only adds to their comfort but from the psychological side does much to encourage them. Their preparation is the most important part of the operation, and if one waits till these old men "come back" our greatest difficulty of the operation has been overcome. When they are ready for the second operation it is only necessary to stretch the suprapubic opening and shell out the prostate. The patient should not necessarily be under the anesthetic over ten minutes. If the suprapubic drain has been in for some weeks and the opening has become fibrous, there is no danger or objection to enlarging it by cutting laterally, which will give ample room. In the past, hemorrhage at the time of operation was one of the difficulties. It is not infrequent now to find that a large, boggy prostate at the first operation has decreased to half its size when it is removed. Therefore, much less bleeding follows. A Pilcher modification of the Hagner bag will fill the cavity and control the bleeding subsequent to the operation, and will also provide drainage through the urethra.

When we consider the two step method of prostatectomy the published reports by various operators as to their mortality statistics allow no difference of opinion that it is the choice operation. Of course, important factors are experience and skill of the operator, the greater number operated upon, the greater improvement in results due to increased skill and confidence acquired.

The term bladder paralysis is out of date in connection with hypertrophy of the prostate. Bladder inertia or atony is not a contraindication to operation. Today the cases are extremely rare in which, following prostatectomy, a permanent condition of residual urine or urinary retention remains. Such cases are without exception due to faulty operation or to spinal disease before operation. Infection of the bladder formerly was considered a contraindication to operation. It is now considered of prime importance to operate and give the bladder free drainage. This we accomplish by the first step of the prostatectomy, and a filthy, dirty bladder will clear up with little difficulty. Although we know of cases that have led a catheter life for years and have broken all the rules of cleanliness and asepsis, we know that as a rule the mortality from infection is ten per cent. during the first two months of catheter life. Since we also know that catheterization brings about malignancy in ten per cent. of the cases, this mortality caused by conservative treatment is almost as large as the mortality of the general surgeon (2).

Shock is one of the difficulties encountered in the one step operation, while in the two step method, if the bladder has been drained and sufficient time allowed, the patient, although very weak when first seen, will improve so that he can easily withstand the short general anesthetic of ten minutes at the second operation. Under local anesthesia the suprapubic drain can be placed in the bladder without a change of ten beats in the pulse rate. This brevity of operation is highly important to many old men who have not great resistance. I do not advocate haste, but if the time of the general anesthetic can be shortened, I believe we materially reduce the mortality. When the prostatectomy is performed in two steps, half of the operation is done under local anesthesia when time is not an important factor.

Cystotomy under infiltration of novocaine, half of one per cent., takes longer than it would under general anesthesia, but it can be performed without any haste in twenty minutes. Care is taken to have the opening in the bladder high up, and purse string suture around the tube makes the opening watertight. The second operation consists of stretching up the original opening and shelling out the adenomatous gland. Freyer emphasizes the fact that the short anesthetic has been a most important factor in his low mortality.

After the second operation our energies are concentrated upon healing the suprapubic wound as quickly as possible. For this accomplishment numerous suggestions have been made by various operators. At first we used an apparatus to keep the bladder constantly flushed. Later Dr. Bethune improved on this apparatus so that there was so little suction in the bladder that it did not interfere with the healing, but kept the wound practically dry. By whatever method, the keeping of the wound dry is the secret of rapid healing. I have used, with satisfaction, an indwelling catheter following the removal of the Hagner bag. The indwelling catheter is sewed to the tube of the Hagner bag and is drawn through the urethra without difficulty, and a stitch in the suprapubic wound holds the catheter in place. In a great many cases this method has been most satisfactory. With some patients who cannot bear an indwelling catheter it is necessary to use a suprapubic drain.

Hiccoughs, when encountered in connection with urological cases, is a most trying complication, both for the patient and the surgeon. The cause is uremia. All food should be stopped and every effort made to relieve the kidneys. Benzyl benzoate by hypodermic injection has acted very well in one case.

Since it is the attention paid to the minutest details that detects anything wrong in the early stages when it can be easily remedied, I have long realized that especially trained nurses for this work are of the greatest aid. They should be more than technicians—they should be diplomats. I feel that my success has largely been due to the conscientious work of my nurses. I view with alarm our growing shortage of probationers. These girls, during their training in the hospital, are watched, and as they develop an interest in these cases are encouraged and directed until the time of their graduation, when they are of the greatest assistance to us. Men of wealth can always procure competent attention, but I dislike to think what will become of the ward patients with the growing scarcity of competent nurses.

Fortunately, most of the difficulties in prostatic surgery can be avoided by the "stitch in time." Accurate diagnosis, together with careful preparation prepares the patient to withstand a short general anesthetic with little or no reaction. The technical details of the operation are easily carried out. With a good nurse in attendance who can early detect signs of trouble so that they are easily remedied, the convalescence should be uneventful.

REFERENCES

1. Bugbee: *Boston Medical and Surgical Journal,* July, 1920.
2. Thomas, B. A.: The Significance of Specializing in Surgery, with Reference Especially to Genitourinary Surgery, *Pennsylvania Medical Journal,* 1916, 20, 101.

504 Electric Building.

Etiological Factors of Chronic Prostatitis*

By A. STRACHSTEIN, M. D.,
New York,
Associate Attending Urologist and Chief of Clinic, Bronx Hospital and Dispensary.

The subject of chronic prostatitis is by no means a new one, nevertheless its frequency and persistency are sufficient to warrant this review of the subject, with the aim of eliminating that mode of treatment which experience has shown to be worthless, and, at the same time, to give prominence to that which has shown itself to be of real help.

ETIOLOGY.

Chronic prostatitis seldom occurs as a primary disease. It frequently follows an attack of acute prostatitis, but more often follows inflammation of the urethra, especially gonorrhea, coming on insidiously and giving rise to but slight symptoms in its early stage. Many cases of chronic prostatitis, however, are postgonorrheal, and may follow several years after the acute attack of gonorrhea. It may follow an acute urethritis, even in cases where the clinical signs point to involvement of the anterior urethra only. I have often found pus in the prostatic secretion of outspoken cases of acute anterior urethritis. It behooves us, therefore, to examine the prostatic secretion in every case of acute urethritis, prior to the discharge of the patient as cured. On the other hand, there are undoubted cases of acute posterior urethritis in which the prostate escapes infection by extension.

Stricture of the urethra is a common cause. This is explained by the fact that there is always a certain amount of chronic urethritis present behind a stricture, caused by the few drops of urine retained behind the constriction. This decomposes, setting up an irritation, then inflammation, and finally extension to the posterior urethra and the ducts communicating with it.

Cystitis, pyelonephritis and nephrolithiasis are often causes of chronic prostatitis. We frequently find chronic prostatitis present in cases of nephrolithiasis; in fact, the prostatic symptoms are the first ones to assert themselves.

Furbringer is of the opinion that prostatitis is a comparatively rare complication of gonorrhea.

---

*Read before the Eastern Medical Society, January 14, 1921.

Our experience, however, coincides with that of Casper (1), who claims it to be present in about eighty-five per cent. of cases of gonorrhea, or in almost all cases of long standing urethral inflammation.

SYMPTOMATOLOGY.

Chronic prostatitis may clinically be subdivided into three main groups:

Group I.—This group comprises cases that are entirely devoid of subjective symptoms and are only discovered by a routine examination of the prostatic secretion. To this group belong the cases mentioned above, namely, cases of acute anterior urethritis, which have at no time shown clinical signs of involvement of the posterior urethra, the prostatic secretion, nevertheless, containing pus cells.

Group II.—This group comprises by far the largest number of cases. These patients seek relief because of the persistence of shreds in the urine after the subsidence of the gonorrhea, and also because of the persistent socalled "morning drop." As time passes on, they also begin to experience vague pain and peculiar sensation in the perineum and rectum, noticing also increased frequency of urination.

Group III.—Group three comprises cases which show no *local* subjective or objective symptoms referable to the prostate, yet present a wide and varied chain of symptoms which are *remote* from the prostate, and present themselves at some distant part of the body. This type of case has attracted considerable attention by the internist and neurologist who have enlisted the aid of the genitourinary surgeon in caring for these unfortunate individuals. During the last six or eight years a great deal of investigation has been carried on by McRae (2 and 3), Caulk (4), Squier (5), and others. The symptoms generally present themselves as referred pains, and their importance lies in the fact that they simulate other diseases from which they must be differentiated. Thus there may be attacks of intense pain simulating renal colic (6). Then, again, there are cases where there is a constant aching pain in some remote region, such as the arms, shoulders, neck or thighs. Chronic irritation of the urethra and prostate have produced mental changes varying in degree from mild neurasthenia to dementia præcox. An interesting communication by Head, of Edinburgh, explained these referred pains. He showed that visceral lesions send painful stimuli to the part of the spinal cord supplying that region, and that from there they may be referred to some other part of the body which is supplied by the same segments of the spinal cord. The prostate communicates with a large part of the body below the diaphragm. General practitioners have, for a long time, recognized that pelvic inflammatory lesions in women produce a wide range of referred pains, but not until recent years has it come to be realized that a great number of referred pains in men come from diseases of the male pelvic organs.

DIAGNOSIS.

Chronic prostatitis cannot be diagnosed by mere rectal palpation. The prostatic ducts and the numerous prostatic glandular acini may be full of pus and yet feel normal to the palpating finger. On the other hand, a prostate may be extremely sensitive to the touch and yet be normal. Neither is the size of the prostate a guide as to a probable pathological lesion. I recall Casper's statement that the sizes and shapes of prostates may vary as do the facial features of persons.

However, irregularity in consistency or contour of the surface may be indicative of disease. Thus, there may be a palpable nodule in one place, or an area of softness or depression at some other point. The former may be indicative of an occluded cystic condition surrounded by a general fibrosis, while the latter may indicate an area of destruction with loss of tissue. The real test, however, lies in the microscopic examination of the expressed prostatic secretion. The finding of clumps of pus cells is pathognomonic. There may, however, be a considerable amount of pus spread in each field of vision, although not in clumps, or there may be only an occasional pus cell as each field is searched. The writer has adopted the following scale for recording the findings on the case histories: Clumps of pus—pus three; considerable amount of pus—pus two; an occasional pus cell—pus one. Attention is called to the fact that one negative finding does not necessarily exclude the presence of pus. Frequently a second prostatic massage a few days later results in the finding of pus where the first examination proved negative. Finally, one must not mistake the heads of numerous spermatozoa for pus cells in a stained specimen.

Urethroscopic examination of the posterior urethra does not impart any information of special value. It is true that we occasionally find dilated prostatic ducts, with pus oozing out, but in most cases this is absent, and very little can be learned about the condition of the prostate by looking at the orifices of the prostatic ducts.

COURSE AND PROGNOSIS.

The course frequently depends upon the causative factor. If the causative factor is found and removed, the prostate will clear up within a reasonable length of time. Patients in group I usually recover in from two to three months, but from ten to twenty per cent. of the cases in groups II and III are persistent and tenacious, irrespective of the mode and extent of treatment. Marked improvement in the appearance of the urine, together with considerable diminution of the pus from the prostatic secretion, as well as lessening of the objective symptoms, may occur. The process may remain dormant for months or even years, only to show an acute exacerbation at some future time.

In considering the prognosis, we must bear in mind the serious consequences that may follow a chronic inflammatory process of this gland. The prostate is endowed with a twofold function, namely, the formation of an external secretion which renders the spermatozoa motile, and of an internal secretion which excites the testes to action. Persistent chronic inflammation causes impairment in the gland with ultimate impotence and sterility.

TREATMENT.

It is almost invariably the rule that the patient in a poor and rundown condition yields to treatment poorly, if at all. It is, therefore, necessary to institute general tonic treatment in these cases. Certain exercise, such as horseback riding, bicycling and dancing, should be avoided. As will be shown later, the prostate and urethra harbor a wide and varied list of microorganism, making it necessary to administer, internally, urotropin or one of its derivatives. It is important to remove any known causative factor, for without removal of the exciting cause it is next to impossible to clear up a chronic prostatitis.

BACTERIOLOGY AND VACCINE THERAPY.

Thirty of the most obstinate cases were selected from my private practice and studied from the bacteriological point of view, with the aim of employing an autogenous vaccine. The following are the results of the cultures in the first ten cases; since the others are essentially alike, it will be unnecessary to take up the entire series:

Case I.	Staphylococcus albus, 500 million. Diphtheroid type bacillus, 250 million.
Case II.	Numerous Streptococcus viridans, 50 million. Few Staphylococcus albus, 500 million.
Case III.	Staphylococcus albus, 250 million. Streptococcus viridans, 500 million. Diphtheroid type bacillus, 250 million.
Case IV.	Hemolytic Staphylococcus albus, 500 million. Diphtheroid type bacillus, 500 million.
Case V.	Staphylococcus albus, 500 million. Diphtheroid bacillus, 500 million.
Case VI.	Colon type bacillus, 500 million.
Case VII.	Staphylococcus albus, 500 million. Colon type bacillus, 250 million.
Case VIII.	Staphylococcus albus. Streptococcus viridans. Diphtheroid type bacillus.
Case IX.	Staphylococcus, some colonies hemolytic. Gram positive plump bacillus.
Case X.	Staphylococcus albus, 500 million. Diphtheroid type bacillus, 500 million.

A vaccine was prepared for each of the thirty cases, and was used in conjunction with the other treatment. While in some of the cases there was quite a marked improvement from the vaccine, in the long run the results were disappointing. No difference could be seen in the end between the cases where vaccine was used and in those where it was not used. The cases which showed the presence of the colon type bacillus, or the Streptococcus viridans, were always the most obstinate and rebellious to treatment. In my series of cases the gonococcus was conspicuous by its absence.

Prostatic massage, when intelligently carried out, is certainly the most important method of treatment, and is the one means at our disposal to which we may turn with hope for a cure. Of course, the proper technic can be learned only from practice and training. Massage should be used on an average of twice a week. Since each massage dislodges pus loaded with numerous microorganisms, it is well to moderately fill the bladder with a weak solution of silver nitrate, and the patient is instructed to urinate soon after the massage. Gradual dilatation, at first with increasing sizes of sounds and later with a Kollmann dilator, should be used once in about eight or ten days. This aids the emptying of the prostatic ducts from within the urethra, just as massage does from without. The accompanying chronic urethritis must, of course, be looked after at the same time. Gratifying results were obtained by the use of hot rectal irrigations. Unfortunately, not every patient can carry out this treatment. In several of the stubborn cases, my office nurse administered the rectal irrigations at the patient's house, every second day, each treatment lasting nearly forty-five minutes, using, during this time, a constant in and out flow of water, as hot as could be borne by the patient's finger. On the alternate days, the patient was instructed to use hot sitz baths. It is my impression that some of these cases would not have recovered without the rectal irrigations.

The conclusions and references to this article will appear in the author's reprints.

Pitfalls in Prostatectomy*

By SERGEANT PRICE MARTIN, M. D.,
Buffalo, N. Y.

In one man out of every five who attains the age of fifty, trouble in urination arises sooner or later, caused by disease of the prostate gland. In the majority of cases this disease consists in the formation of benign adenomatous tumor masses within the gland; in the remainder it is due to malignant disease or to the fibrous prostate of chronic prostatitis.

The cause of the formation of benign adenomata in any part of the body is unknown, but it is a distinct step forward to recognize that the common cause of enlargement of the prostate in men over fifty is benign tumor formation. The disease may appear in many members of the same family through several generations, but there is no proof that it is inherited. Efforts have been made to prove that there are predisposing causes, such as sexual excess and chronic gonorrheal inflammation, but so far without any real evidence.

It is true that inflammation of the prostate can give rise to enlargement of this gland, and may even lead to residual urine, but the disease is not limited to any age, is more common in young adult life, is not progressive, and can be cured by suitable treatment without operation. Men over fifty are not immune to such inflammations if they contract gonorrhea at that age, and persons over fifty without venereal taint but with adenomatous prostates are susceptible to infection of the prostate with such organisms as the colon bacillus and staphylococcus and to attacks of mild inflammation, but in such cases the predisposing cause is an adenomatous prostate, the exciting causes, the bacteria, are secondary, and may be introduced by the catheter or enter from the blood stream. Such attacks of inflammation may play a part in causing intermittent attacks of complete retention in prostatics who in the intervals show comparatively few symptoms of the disease, but they are in no way responsible for the primary enlargement of the gland.

---

*Read before the Niagara Falls Academy of Medicine, Niagara Falls, N. Y., October 12, 1920.

CLINICAL HISTORY, SYMPTOMS AND SIGNS.

Kidd has classified three clinical types that can be distinguished in accordance with the onset symptoms.

The irritable bladder type.—A robust man between the ages of fifty and sixty is disturbed in the middle of his sleep by an irresistible desire to micturate, and has to arise and empty his bladder. This goes on with few exceptions night after night. Gradually the calls become more frequent, so that the sufferer has to arise four or five times to satisfy them, and sound sleep is banished. By this time he begins to notice that he has to urinate more often in the day time, and that the call cannot be resisted for more than a few minutes, but, having reached a convenient place in which to micturate, he finds that he is unable to start his stream as quickly as he used to, that straining is not only of no avail but even detrimental to his chances, and that when the stream does appear it is a small one or, lacking force, falls perpendicularly to the ground. This state of affairs he may endure for several years, until an attack of acute retention brings him under medical observation.

The painful retention type.—A man of fifty or sixty, in the best of health, suddenly discovers that he is unable to urinate. After a few hours he is taken with painful cramps in the hypogastric region along with intense desire to urinate, but he can pass nothing, and, becoming alarmed, he sends for the doctor, who relieves him by means of the urethral catheter and the difficulty disappears for the time being, perhaps for six months or longer. These attacks, however, recur at lessening intervals until the retention may become complete and permanent, so that regular catheterization becomes an established necessity. They appear to be produced by a condition of congestion of the prostatic urethra and a spasm of the sphincter apparatus, set up by irritation of cold or alcohol, or by a mild bacterial invasion of the prostatic urethra. They are painful because the bladder muscle as a rule is in good condition and able to undergo cramping contractions.

The painless incontinence type.—A cadaveric, wasted old man, who for some time has been afflicted with thirst and dyspeptic troubles, finds that he cannot hold his urine for more than a few minutes, but that it dribbles away drop by drop, fouling his garments and debarring him altogether from society. For some time past he has been worried with lumbago, so that he determines to seek medical advice, and is astonished when he learns that his bladder is full of urine, as he imagines that he has been emptying it every few minutes. The condition is due to complete painless atony of the bladder muscle with retention overflow (false incontinence), and the lumbago is caused by back pressure on the kidneys.

CLINICAL SYMPTOMS.

Pain as a rule is more often absent than present during the first few years of prostatic enlargement, a circumstance that keeps the patient from seeking advice early, as he finds it hard to believe that any other symptom can be serious if not accompanied by pain. Meanwhile, irreparable damage is being slowly worked on his bladder and kidneys. Pain felt in the sacral region and down the back or inner sides of the legs may be due to the pressure of vesical calculi, but is far more often an indication that the disease is malignant and has passed beyond the limits of the prostatic capsule.

Nocturnal increased frequency in urination in a man over fifty years old is always very suggestive of enlargement of the prostate. The diurnal increase is often just as great, but is not so noticeable to the patient. The urinary stream is also as a rule altered in various ways. It may be small, of poor force, falling perpendicularly in a steady stream, or forced out drop by drop. Incontinence from passive overflow is common, but true incontinence is exceedingly rare.

PHYSICAL SIGNS.

The bladder may not be palpable, or it may form a definite, firm, elastic tumor extending upwards above the pubes to a greater or lesser extent, and may reach to the umbilicus. The medium-sized bladders are met with in cases of painful retention, the large flaccid bladders in cases of painless incontinence with overflow.

Rectal examination is best carried out after the bladder has been emptied. With the utmost gentleness the surgeon inserts a gloved finger, lubricated with vaseline, into the rectum, taking note of the condition of the sphincter, which if relaxed at once suggests a lesion of the spinal cord and should be further checked up later by careful cystoscopic examination and a Wassermann test. The size of the posterior surface of the prostate is noted, the nature of the surface, whether it is smooth and rounded or nodular; its consistency, whether it is soft and elastic, fibrous, or of stony hardness. Adenomatous prostates do not necessarily feel enlarged through the rectum, though they may be causing dangerous symptoms.

TREATMENT.

When a patient applies for relief in the early stages, two courses lie open to the surgeon. He can prescribe bladder lavage through a urethral catheter, and general tonics, or he may urge an early operation.

FACTORS AGAINST EARLY OPERATION.

1. The difficulty in persuading the patient that the disease is serious enough to warrant it.
2. The fact that many patients with prostatitis go on for years with little trouble save for an occasional attack of retention.

FACTORS IN FAVOR OF IMMEDIATE OPERATION.

1. An enlarged prostate tends to increase in size, producing increasing difficulty in urination leading up to complete retention or overflow, with attacks of cystitis, hematuria, pyelitis, and uremia.

2. If the obstruction remains unrelieved, the kidneys are slowly being destroyed by back pressure, thus diminishing the chances of successful operation at a later date.

3. The earlier operation is performed the more fitted the patient is to stand its risks: shock, uremia, and infection.

If there seems little need for active interference, however, and the prostate is small, we advise waiting for six months to a year, while the patient is kept under close observation, especial attention being paid to any troublesome symptom. The power of the bladder to empty itself is watched carefully, and the general effect upon the kidneys and vascular system determined by observation of the urine, blood pressure, and the heart. I have treated a number of patients by palliative measures where others would have been subjected to operation. These have all been early or borderland cases. If, however, the patient is in a poor walk of life, and is dependent on his daily work for his living, I am in favor of urging an immediate operation—for which complete success can be promised, as sooner or later a patient with prostatis will be driven to a choice between catheter life and operation. Too often he is persuaded to start on a catheter life. The mortality of repeated catheterization is higher than that of operation. This statement needs to be impressed upon the minds of the profession and public. At present it is imagined that it is a trivial thing to pass a catheter, but the sound of the word operation suggests endless risks. A catheter never cures—it only puts off the inevitable day; its use will have to be continued throughout the rest of life once, twice, or many times a day. Contrast this with a successful prostatectomy: no need for a catheter—restful nights—no retained urine.

OPERATION.

For the common form of enlarged adenomatous prostate two forms of prostatectomy are open at the present day—the suprapubic and the perineal. It is not my desire to advocate one operation for all cases, but I do feel that suprapubic two stage prostatectomy is the safest, involves fewer complications, and gives the best functional results.

Argument has been brought up against primary suprapubic drainage that it requires two operations. This can be answered by the fact that two short operations, the first under local anesthesia, the second on a greatly improved patient under gas-oxygen anesthesia, are to be preferred to one operation of longer duration. If the patient is excitable and nervous we occasionally employ gas and oxygen anesthesia for the first operation, though as a rule a hypodermic injection of a third of a grain of pantopon, administered an hour before operation, followed by local anesthesia, will prove sufficient for the bladder drainage.

An incision is made through the skin, subcutaneous tissue and fascia, the recti muscles are separated and retracted, the peritoneal fold is stripped back off the bladder, the bladder is then drawn upward slightly, and a puncture wound made in the fundus of the bladder through which the index finger is inserted and the vesical cavity explored and intravesical portion of the prostate palpated. This having been completed, a pessar catheter is then inserted into the bladder and held in place by a purse string suture of catgut. Thus the urethra is put at rest. Congestion of the prostate and vesical neck is reduced, free drainage of the bladder is set up, and back pressure on the kidneys is removed, thus making it possible to build up the patient and reestablish his kidney balance. Under complete daily bodily elimination the patient rapidly improves, and, as a rule, at the end of ten days to two weeks he has reached a condition whereby he will be but slightly disturbed by the second operation. During this procedure the blood urea nitrogen content, the phenolsulphonephthalein output, the total quantity of urine and specific gravity are carefully tested. These tests are sufficiently accurate, so that when combined with the clinical picture the patient's condition can be carefully followed.

For the second operation—gas oxygen anesthesia having been employed—one finger is inserted through the suprapubic wound into the urethral orifice and the prostatic lobes are separated, the urethral mucous membrane tearing at the point of separation of the lobes. The finger is then swept around gently between the adenomatous masses and the prostatic capsule, freeing the tumor. This can be aided by elevation of the prostate by a finger inserted into the rectum, and the prostate is then lifted out. The bladder and prostatic cavity are then irrigated with hot boric acid solution, and hemorrhage is controlled by a Pilcher modification of the Hagner bag inserted into the prostatic cavity and a Marion tube sutured into the bladder. Traction on the bag is maintained for twelve hours, when it is released and emptied but allowed to remain in position to be used again should bleeding occur.

Forty-eight hours after prostatectomy the bag and Marion tube are removed and a small drainage tube is inserted in the suprapubic wound and attached to a bottle alongside of the bed. At the end of a week an indwelling catheter is inserted in the urethra and the suprapubic catheter removed and the incision allowed to close.

Carrying out this technic, most of my patients void normally through the urethra, and their suprapubic incisions are entirely healed at the end of fourteen to twenty-one days following the prostatectomy.

THE CAUSES OF DEATH FOLLOWING PROSTATECTOMY.

1. Uremia accounts for a large number, but this can be avoided by earlier operation and body elimination following the preliminary suprapubic drainage, also immediately following the second operation the patient should be given a hypodermoclysis of one thousand c. c. of normal saline solution, and is placed upon fluids by mouth at frequent intervals as soon as the stomach will retain them.

2. Shock is responsible for a few deaths, but is becoming less frequent, now that the condition is better understood.

3. Sepsis is guarded against by flushing the kidneys by means of copious drinking, of diuretic waters, and by urinary antiseptics.

4. Hemorrhage may be profuse, but is seldom fatal.
5. Pulmonary embolism is a complication that occasionally arises, and is responsible for a few deaths.
6. Postoperative pneumonia also accounts for a few deaths, but is guarded against by getting the patient out of bed early following the prostatectomy.

REFERENCES.

1. Watson, F. S.: *The Operative Treatment of the Hypertrophied Prostate,* Boston, 1888.
2. Bugbee, Henry G.: Prostatectomy, *The Boston Medical and Surgical Journal,* 1920.
3. Kidd: *Urinary Surgery.*

494 Franklin Street.

Seminal Vesiculitis*

By M. ZIGLER, M. D.,
New York,
Instructor in Genitourinary and Venereal Disease at New York Post-Graduate Hospital and Medical School.

The seminal vesicles are two hollow pyriform convoluted bodies, lying in the rectal vesical space, at the base of the bladder, on either side of the median line. The apices of either organ are separated by a considerable space, while their lower extremities converge. The lower portion of each vesicle terminates in a duct, the ejaculatory duct. These ducts connect the cavities of the seminal vesicles with the urethra, each entering the urethra by a separate slitlike opening, at either side of the anterior portion of the verumontanum. The cavity of the seminal vesicle is irregular. The vesicle itself is about two inches in length. The seminal vesicle lies to the outer side of its spermatic cord which terminates at the inner lower portion of the vesicle.

The last inch and a quarter of the cord is large and muscular; corresponding to this outside enlargement there is an enlargement of the cavity of the cord. This roomy portion is called the ampulla of Henle. This ampulla communicates with the cavity of the vesicle by a constricted valvular opening. The epithelium lining these cavities has secretive qualities and is columnar in structure. The cavity of the seminal vesicle is filled with an opalescent fluid. This fluid, the bulk of which is secreted in these cavities, contains the spermatozoa and serves also to nourish them during their sojourn in the parts. The function of the apparatus just described is to attract the spermatozoa, retain them as long as necessary, and lastly, to eject them during the sexual act.

Dr. Eugene Fuller compares the action of the cord and seminal vesicle to that of the heart as follows:

The ampulla of Henle corresponds to an auricle, the valvular opening connecting it with the cavity of the vesicle to a mitral valve, while the vesicle itself plays the part of a ventricle. There is this difference; the two parts have no rhythmical relation as regards their contractions as exist in connection with the cavities of the heart, and besides the cavity of the vesicle has also to serve as a storehouse for the seminal fluid, a function not possessed by the heart. The contractions of the ampulla of Henle are involuntary while those of the seminal vesicle are to a great extent voluntary, depending upon a spinal nerve action. When ejaculation occurs the muscular fibres of the vesicle contract in unison with those of the prostate. Both these sets of muscles serve to greatly diminish the size of the cavity of the vesicle, those of the prostate by pulling down the sac, thus decreasing the length of the cavity, while those of the organ proper contract its circumference. The simultaneous contraction also of the fibres of the prostate encircling the neck of the bladder prevents the semen on being forced out along the ejaculatory ducts, from flowing backwards. The fact that the ejaculatory ducts and their common sheath are elastic and are not joined to the prostate but lie in a lymph space, allows them to become shortened during the act of ejaculation, the result being that their calibres are increased, while at the same time the canals themselves remain straight and free from kinks. Anything which serves to prevent the movements of the vesicles naturally interferes with the act of ejaculation.

To practice urology successfully it is absolutely necessary to be able to outline the organs in the postprostatic rectovesical space by means of the finger tip, just the same as the gynecologist must be able to map out the organs in the female pelvis. As Guyon says, "The urologist must see with his finger tip." In order to do this successfully many points must be considered. First, the position of the patient; second, the position of the doctor; third, the doctor's hand; fourth, the doctor's experience.

Before considering the position of the patient in this examination of the postprostatic rectovesical space, it perhaps will not be amiss to refresh our memories with the organs that can be mapped out with the finger in the rectum. The rectum itself almost up to the sigmoid can be readily palpated. Through the rectum the two lobes of the prostate, the central fissure of the prostate, the two seminal vesicles and the base of the bladder can be palpated. In the examination of the office patient he is told to turn his feet inward, keep his knees perfectly straight and bend horizontally forward over a small stool, the lower extremities being perpendicular and the rest of the body parallel to the floor. The patient in this position rests one hand on a small stool and with the other he holds a glass graduate under his penis, so that if any material be expressed from the prostate or seminal vesicles it should flow into the glass and give the medical attendant a chance to see its color, consistency, quantity, and other properties. After the patient is in proper position the next thing one does is to place a finger cot on the index finger. This cot is lubricated with a lubricating jelly. I use a lubricating jelly which is an Iceland moss preparation, slightly antiseptic, nonirritating, soluble in water and is the only lubricating jelly that I know of that will stick on a finger cot or a sound without sliding off like water or without forming thick lumpy masses. In clinic practice one can use petroleum on a finger cot. The disadvantage is that it is irritating, quite dirty and not soluble in water. The advantage is that it is much cheaper.

---

*Read at the Society of Alumni of Lebanon Hospital, November 9, 1920.

After lubricating the finger one inspects the rectum under a good light. One looks particularly for hemorrhoids, especially for inflamed ones; also one inspects for proctitis. This inspection is done to avoid undue pressure with the finger during examination so as to avoid unnecessary pain and trauma. Because not infrequently undue pressure on an inflamed area may cause an infection, abscess, fissures, or other abnormalities. Next one inspects for fissures, fistulæ, scars, or remains of an ischiorectal abscess, because a certain number of these cases of ischiorectal abscess have urogenital tuberculosis. Such being the case, a diagnosis of ischiorectal abscess of tuberculous origin may throw light on the urological condition in that the same tubercle that causes a fissure or an abscess may be the cause of the urological condition. At the same time one looks for condyloma lata and also for initial lesion because the act of stripping by its backward and forward motion may be a very easy way for the surgeon to inoculate himself with a primary lesion at the base of the index finger.

After one has throughly inspected the anus and its vicinity, one is ready for the introduction of the examining finger into the rectum. In cases where one is in doubt as to the cleanliness of the anal region or where one has reason to suspect syphilis, one takes a piece of gauze about three inches square and pushes the index finger through the same thus forcing the gauze down to the base of the index finger. This gauze is left in this position as a protection for the hand against feces or infection.

The method of introduction of the finger into the rectum is as follows: After all of the previous preparations have been made one separates both buttocks with the left hand while introducing the well lubricated finger cotted index finger of the right hand, palmar surface pointing upward or sideward into the rectum. Then as soon as one has penetrated about an inch into the rectum, the palmar surface is turned downward and while so doing, one pushes the body against the elbow and the right index finger is moved forward and laterally to the right seminal vesicle and one palpates the seminal vesicle from its very top down to its meeting place with the cord. It is important to remember that in order to reach the very summit of the seminal vesicle that the examiner must keep his index finger, wrist and forearm extended in one straight line. Just as soon as the examiner bends his index finger, wrist or forearm, he loses distance and will probably not be able to reach the top of the vesicle.

This last statement is made although I know that there are authorities to the contrary. I feel justified in stating that in ninety-five per cent. of the cases the operator can reach the top, the very top of the seminal vesicles, providing the examiner has an average length index finger and if the other fingers are not too fat, rigid or clumsy. Those of us who have long, narrow, tapering, mobile fingers are better fitted to perform this examination. The five per cent. of cases where one cannot reach the top of the seminal sacs usually occur in very fat individuals who have large, fat, flaring buttocks. In these cases one makes the diagnosis of seminal vesiculitis by being able to palpate a portion of the seminal vesicle, even if only a small portion. That portion that can be palpated in these cases is the one nearest the prostate, namely the lower portion where it joins or is about to be joined by the cord. If that portion is diseased one takes it for granted that the upper portion is also diseased. For the actual treatment of this type of case where the fingers cannot reach the top of the seminal vesicle, one uses what is called the reinforced finger tip which gives an extra reach of one and a half to two inches. This reinforced finger tip is used for treatment only, that is for stripping difficult, almost inaccessible seminal vesicles, and not for diagnosing pathological conditions present in the seminal vesicle.

The examination of the postprostatic rectovesical space is gone over in a very methodical manner. First one examines the right seminal vesicle in its entire length from above downward. This is done with the ball of the index finger, care being taken that the finger nail is not long so that one should not scratch the rectal wall. Beginners are likely to either use too much force or scratch the rectum with the finger nail. In performing the examination the index finger, except the last phalanx, is kept absolutely straight, rigid and extended, while the terminal phalanx is constantly alternately flexed and extended. The finger, as a whole, is moved from above downward, forward and outward. In other words, there is a double motion, while the tip of the index finger is going through flexion and extension, the whole finger is moving downward, forward and outward from the very top of the sac to its bottom across the posterior surface of the seminal vesicle. After the right seminal vesicle has been palpated and stripped, then the right prostatic lobe is palpated and massaged in the same downward, forward and outward motion. The finger is not brought out of the rectum but only to the lower edge of the prostate. The finger is now reintroduced as previously described and base of the bladder is palpated for growths or stones. Then the finger is passed over to the left seminal vesicle, brought down its entire length and then down the left prostatic lobe. In this way the whole of the postprostatic rectovesical space has been examined, and if necessary, seminal vesicles stripped or prostate massaged.

The seminal vesicle is palpated through the rectal wall immediately over that organ. The perfectly normal seminal vesicle is soft and rather indistinct in outline, rather mobile and can be readily pushed to either side but it cannot be permanently dislocated. As soon as pressure of the index finger is released it moves back to its original position. In order to know the pathological feel it is absolutely essential to master the normal feel. As mentioned previously, one must keep the index finger, wrist and forearm in one straight line not to lose distance; one must have the patient in the proper position; the examiner himself must be in a proper position, either sitting on a small stool or standing off to one side of the patient. The examiner, in addition, must have an average length finger but not too large or clumsy, and a strong wrist and forearm. An important point is the experience gained in examining a large number of patients both normal and pathological. Of all the diagnostic symptoms and signs of seminal vesiculitis the most important one is the sign or signs obtained by the palpating finger in the rectovesical space.

In urological work, particularly in reference to gonorrhea of the genitourinary tract, my experience has been that the medical attendant centres all of his attention on the urethra, particularly the anterior urethra. Some, in addition, treat the posterior urethra, less often the prostate is palpated but most infrequently the seminal vesicular disease is investigated. Of those who attempt to examine seminal vesicles few really know what they feel; still fewer are able to interpret their findings. This is due to the fact that up to a decade ago the importance of the study of seminal vesicular disease was not recognized. Also to the fact that the medical student was not impressed with its importance. In fact, if I remember correctly, seminal vesicular disease was not even considered in the college curriculum, during my college days. The great pioneer in this work was Eugene Fuller, who first showed the importance of this organ as being a focal point for harboring gonococci and other bacteria. For many years he plodded on in this field but the great body of medical men refused to accept his opinions, either because of jealousies or because they felt that seminal vesicular disease played no important part in infections and inflammations of the genitourinary tract. I have had the exceptional opportunity of studying seminal vesicular disease under his guidance since 1907 and have found that these organs are involved in a large percentage of cases of gonorrhea and also in many other associated infections and conditions. Even today it is not thoroughly appreciated by the profession that these organs play such an important part in urology. It is with the idea of impressing the frequency and importance of seminal vesicular disease upon the medical profession that this paper is written.

The affections and conditions of the seminal vesicles may be described as being traumatism, calculi, malignancy and inflammations. Any combination of these groups or all combinations may exist in the one patient. In this paper I shall take up only the inflammation; in other words, seminal vesiculitis.

SEMINAL VESICULITIS.

Seminal vesiculitis may be acute, subacute or chronic. Many cases commence as an acute infection and after a short or a long period become subacute and finally chronic, or may commence as an acute inflammation and resolve without going into any other state. Some forms of low grade inflammation appear to be chronic from the outset, patients giving no history of any acute stage. Seminal vesiculitis may be simple mucous membrane inflammation at the outset and remain so during its entire course or it may extend into the middle muscular coat causing a membranomuscular inflammation or into the fibrous covering causing a membranomuscular fibrous inflammation, or finally, it may in the most extreme cases involve the fibrous tissue outside and across both seminal vesicles causing a large sclerotic mass to be felt filling up the entire postprostatic rectal space. The last is the most extreme grade of inflammation and what I call the sclerous tumefied seminal vesiculitis. The inflammation in the seminal vesicles may be further subdivided into two types, these types being firstly, inflammations non bacterial; secondly, bacterial. Not infrequently after the first type has existed for a time, it is converted into the second type.

The first type of simple non bacterial seminal vesiculitis is usually of a mild type and is due to wrong sexual hygiene. This is the form that is usually of the chronic type and of quite frequent occurrence. These cases might be conveniently divided into two types: Those cases occuring amongst youths; those cases occurring amongst adults.

This simple noninfective seminal vesiculitis is really a congestive type. The inflammation being a congestion of the mucous membrane in its mildest type, in the more severe type there is also an involvement of the muscular coat resulting in atony of the seminal vesicles and in the most markedly involved case resulting in the fibrous tissue coat and perivesical fascia being involved. In other words, the simple congestive noninfectious cases may go through all the pathological changes that a virulent type goes through, except abscess. After the process has lasted long enough it may eventually become infected with staphylococci, colon bacilli, or gonococci, and then run a course more protracted and severe than the case that is primarily infected on a healthy vesicle. It being quite natural, that bacteria taking hold of an area previously devitalized and injured should readily propagate.

SIMPLE NONINFECTIVE SEMINAL VESICULITIS AMONG YOUTHS.

The etiological factors causing seminal vesiculitis in youths up to about twenty-one years, are as follows:

Masturbation plays an important part in these cases. One will not say that every youth who has masturbated will develop lesions, but one will say that many of the cases of self abuse of the sexual organs by masturbating have resulted in very definite injury to the genitourinary organs. How do we explain the condition of nondamage in other individuals who have apparently practiced the act even for a great many years? The explanation is as follows: At the time that the youth practices masturbation, usually at about the age of twelve to twenty years, his sexual apparatus is not yet fully developed and is only reaching maturity. It is quite natural to argue that an organ not yet fully developed will withstand traumatism or injury poorly. Then again, there comes up the story of the frequency of masturbation. Masturbation being an abnormal act performed on a yet subnormal apparatus is not a real physiological act and if repeated often enough results in a pathological condition in many cases. The first result, as a rule, is a congestion in the posterior urethra and seminal vesicles. In other words, the dilatation of the cavernous sinuses and the congestive process that occurs during the normal engorgement of the genital organs during the sexual act, remain for a considerable time after the abnormal act of masturbation.

In the normal cases, however, the turgescence accompanying the same is promptly relieved upon the completion of the sexual act. In other words, this abnormal congestion persists since the sexual masturbation act is incomplete. This congestion persists for a longer period than it should. Each successive act of masturbation results in this congestion remaining for longer and longer periods and finally congestion of these organs remains permanently. This chronic congestion causes irritation and sends impulses of sexual stimulation with ever increasing frequency, so that the individual practices his act more and more frequently, adding thereby more insult to injury. In other words, by this time he has established a vicious circle, the congestion causing him to masturbate and the masturbation causing added congestion. So that, even if by this time he is under the care of a physician he is unable to stop his pernicious habit. If he is, in addition, a mentally defective, or if he has a strain of mental weakness, he sinks lower and lower in the social scale. If he comes of a good strain he may worry and be conscience stricken, feeling that he has committed a sin against God and also against his fellowmen. This constant worry may lower his efficiency so that he will be unable to perform his work properly and will lose one position after another. Some of you gentlemen may now ask why we do not see a great many more of these wrecks than we do, if the act of masturbation may be so harmful, especially since masturbation is so prevalent amongst boys. We all know that some individuals have an absolute immunity to infection, others only a relative immunity. To my mind the same law applies to a trauma of any kind. In all probability most seminal vesicles have an inherent resistance to this trauma of abnormal sexuality. In other words, different seminal vesicles react differently to the same trauma. That is, many individuals have seminal vesicles which are inherently resistant to this trauma and in spite of the trauma manage to get on and perform their work properly and are not apparently damaged, while others, probably a small percentage compared to the large class of masturbators, sustain serious damage to the genitourinary apparatus.

We all know that many individuals go through life overeating or overdrinking. A certain number are killed by their acts; others are moderately injured and some show no signs of their dissipation. In a certain sense one might say the same about the seminal vesicles. The extreme type of case would be the sclerous tumefied seminal vesiculitis. The other extreme would be the case that had absolutely no damage, while in between would be various degrees of involvement.

In addition to the inherent resistance of the different kinds of sacs that has been given us, one must consider the frequency with which the patient has indulged in masturbation. Other things being equal, the patient who masturbates frequently will be more likely to develop lesions than the one who does so infrequently; also the duration over which the act has been practiced. Many of these youths of the better mental type practice the act under some self control, masturbating infrequently, even if over a long period. Others of the same type, while having practiced the act frequently, did so over a very short period. As soon as they knew better they had normal sexual intercourse and thereby escaped any serious damage.

I must again revert to the hereditary resistant tissue theory, because I have, in going over the sexual histories of many individuals, discovered that many of them gave histories of repeated acts of masturbation and yet, on examination, showed no involvement of their seminal vesicles or prostate. This has happened so often that it has stamped itself indelibly on my mind. I believe that a great many masturbators have no resulting damage; that a small number have a very marked permanent damage, damage just as severe as results from a severe gonococcus infection of the seminal vesicle. I also believe that many other individuals have slight damage which does not manifest itself until middle age, when impairment of their sexual function manifests itself and can be definitely traced to their precocious sexuality in masturbating during youth.

Cases of masturbation occurring among adults can be readily subdivided into two classes. Firstly, those who are chronic addicts; secondly, those who do so only occasionally. The chronic addict type are the dangerous masturbators because they have commenced in youth and go through adult life practicing this vicious habit. But in every case of chronic masturbation going on beyond early adult life, I have found marked lesions of the seminal vesicles and not infrequently also marked lesions of the prostate. In most of the individuals who have continued this practice persistently and continuously through adult life, I have found lowered mentality, incapacity for work and inefficiency. Many of these individuals are barely able to provide the necessities of life. I call them chronic confirmed masturbators. Fortunately for society, we do not see many of this type.

The second type of adult masturbator, namely, the one who masturbates occasionally, is not as a rule a vicious, confirmed masturbator. He masturbates only occasionally, either when he is unable to have natural intercourse because off at sea or because he is unable at that particular time to meet any female with whom he can have intercourse. In some cases I have found males who occasionally masturbate at long intervals because they are afraid of venereal infection. All in all, one would say that nearly all adult males who masturbate do so more because of necessity than of choice, since the natural instinct of the male is to have sexual intercourse with the opposite sex. Of the chronic type of masturbator one will usually find a mentally deficient individual. Some have thought that masturbation has in some cases caused insanity, but I personally have always believed that the opposite is true, namely, that these individuals are confirmed masturbators because they are mentally deficient. I do believe, however, that, to a certain extent, individuals who masturbate through adult life suffer with a loss of general tone and do lose efficiency in their work. Some individuals have done practically no harm to their genitourinary apparatus, but by their acts of masturbation yet become neurasthenics because they have read about the harm that might result from their act, and because they become conscience stricken, feeling that they have done something wrong. When, however, they are taken in hand and advised of the true state of affairs, they usually recover and become perfectly normal individuals.

A second etiological factor in producing simple noninfective seminal vesiculitis is excessive intercourse. Especially is this the case in a youth whose sexual apparatus is not yet absolutely matured, so that it withstands this excessive natural physiological congestion poorly. It not infrequently happens that a youth falls into the hands of a mature woman or a nymphomaniac and is used up to the *n*th degree, and finally develops seminal vesiculitis. Excessive intercourse also occasionally plays a part in the cause of seminal vesiculitis in adults, especially when combined with alcoholic excess, over feeding and constipation.

The explanation of the occurrence of seminal vesiculitis in adults is as follows: First, the excessive strain on the genitourinary apparatus; second, the excess of fuel in the shape of food and alcohol introduced into the system causes a congestion of the seminal vesicles, and a constipated bowel pressing against the overused seminal vesicles causes additional congestion.

In the office, the question often comes up—what is excessive intercourse? That is a difficult question to answer. Nevertheless, in general terms one answers this question by finding out the actual sexual abilities of the particular individual, his age, his general physical condition and strength. The younger and more vigorous individual is quite naturally expected to have greater sexual power than an older man, other things being equal. However, the important point is to find out how frequently the patient has intercourse during a week and also the number of sexual intercourses a night. If he is not generally or locally weakened, if after his intercourse he does not feel exhausted, if he is able to resume his business next day stimulated and feeling well, if he completes the sexual act perfectly, if there are no local pains or aches in the genitourinary tract, if no local feelings of weight or heaviness are present, if the orgasm is not delayed beyond the normal, if the act does not cause premature ejaculation, then there is no reason for cutting down the frequency of the intercourse.

If, however, a patient makes the statement that after the second intercourse he is exhausted, but nevertheless attempts a third or a fourth seance, then the third and fourth are to be interdicted. In other words, the amount of intercourse should be cut down to that particular frequency that the individual can perform and perform well. No unusual effort or exhaustion should accompany or follow the act, but rather a feeling of well being. Other things being equal, their frequency should be greatest between the ages of twenty and thirty years, and from that period on intercourse should be less frequent.

A third etiological factor of simple noninfective vesiculitis is sexual stimulation without gratification. While there are many cases of seminal vesiculitis which are cases of seminal vesiculitis without any accompanying inflammations in the neighboring organs, most cases of seminal vesiculitis, however, are accompanied by prostatitis and posterior urethritis. These three inflammations accompany each other. This may occur in simple seminal vesiculitis as well as with infective seminal vesiculitis. However, in the gonorrheal type, the triad are more frequently involved than in simple seminal vesiculitis. Sexual stimulation without gratification is practised a great deal more frequently than is supposed. The reason is quite selfevident. This practice is accomplished in many ways—kissing, dancing, squeezing, hugging, fondling the genitals, actual contact of these organs without the penis effecting entrance. The opportunities are presented in coeducational schools, business offices, shops and factories, where males and females working side by side come in social and business contact. The engaged couple are likely to go through with this act for a long time. Not infrequently the male of such a couple is seen in our offices with typical symptoms of seminal vesiculitis. Seminal vesiculitis of this type is usually of a light grade and responds to treatment rapidly. This is one reason why couples should not be allowed to remain engaged for too long a period. In the treatment of this type of patient I usually advise the male to go home early, in fact, as soon as the family retires, in order to avoid additional trauma.

During the past year I have been taking care of a young man who was married two years. During this entire period he had never had sexual intercourse for fear of impregnating his wife, and had practical sexual stimulation without gratification. He came to the office because, when he finally attempted natural intercourse, he found he was impotent. Examination showed both seminal vesicles and verumontanum markedly inflamed. The probable explanation of the harm done by this act is as follows: Mostly all sexual intercourse is preceded by a period of sexual stimulation, but usually this is only a short period, preceding the sexual act. Then the normal sexual act follows. In these cases of sexual stimulation without gratification, however, a spooning couple may keep this stimulation up for hours. In some cases the male may allow himself an ejaculation; in other cases he will not do so. In the cases where he does allow himself an ejaculation there is prompt relief of the engorgement, and yet the whole act is not a natural one, the orgasm being imperfect and thereby unnatural, and, therefore, if this unnatural act is often repeated harm will probably result. In those cases where no orgasm takes place, the male, after leaving his fiancée, does so with the erection and engorgement persisting for some time after the stimulation. This, if repeated often and kept up for a long time, at each seance will cause chronic engorgement and eventually a real inflammation, and in some cases terminate in an infection as an end result.

A fourth etiological factor in simple nonbacterial seminal vesiculitis is the act of withdrawal as practised by the male. During the act of intercourse he withdraws his penis from the vagina shortly before ejaculation in order that the ejaculative fluid should be deposited in the outside world. This, of course, is done so that impregnation should not take place. This act is practised by both unmarried and married couples. I think it is practised much more frequently by married couples than unmarried. The reason of its prevalence among married people, as a rule, is that they already have about as many children as they can support, and in some cases because the female of the species refuses to have the maternal cares and trials of pregnancy, delivery and nursing of her offspring, or of taking care of any additional children. Be that as it may, they refuse to allow their husbands to have natural intercourse. What is the result? It is very difficult for most individuals to do two things at one time and to do them both well. The female's part in the normal sexual act is considered passive for the most part, and the male's part active. Yet, both of them, if the act is to be successful, must concentrate. However, the greatest concentration must be on the part of the male. In this abnormal act of withdrawal he is obliged to concentrate and times his act so that he develops an orgasm and at the same time must concentrate so that the ejaculation is extravaginal. In other words, when the sexual act is at its fastigium and he is about to have his orgasm with its associated ejaculation, he must break into the act, so to speak, by withdrawing. That this break into the sexual act has an abortive effect on the male there is no doubt.

An act performed in this way is far from Nature's idea. Yet he must break his sexual act, thereby diminishing the intensity of the orgasm, thereby also probably diminishing the complete emptying of the seminal sacs, thereby also imperfectly relieving the physiological engorgement of the genital organs. This engorgement persists for a longer period than it should, and thereby eventually leads to a permanent congestion of the seminal vesicles if frequently repeated. Not alone this pathological congestion but also the imperfect sexual act previously mentioned, if frequently repeated, disarranges the complex mechanism of a perfect act, so that in the succeeding intercourses this complex abnormal mechanism is made still more imperfect. Each added imperfect abnormal act makes the succeeding ones still more imperfect and keeps adding insult to injury until finally seminal vesiculitis and posterior urethritis result. After the sacs have developed seminal vesiculitis in addition to being used imperfectly, the patient then develops symptoms of impotency.

A fifth etiological factor in simple nonbacterial seminal vesiculitis is tight fitting condoms. Tight fitting condoms are frequently the cause of seminal vesiculitis, the tight fitting rubber condom diminishing sensation of contact of the glans with the vagina and by its tightness constricting the organ, causes an artificial engorgement and at the same time delays orgasm. On the same principle as that mentioned above, this delayed orgasm keeps up congestion and results in an imperfect orgasm and eventually may end in seminal vesiculitis.

Several authors have stated that oral and anal intercourse have resulted in simple seminal vesiculitis. I have not had enough cases of this kind to verify or dispute this statement. I have, however, seen one very severe grade of urethritis and seminal vesiculitis and stricture of the urethra down to an 8 French result from a colon bacillus infection due to anal intercourse. I have also seen cases of seminal vesiculitis result from mechanical and chemical instrumentation of the urethra, the inflammation in that case spreading from the urethra through the ejaculatory ducts into the seminal vesicles.

Until now we have discussed seminal vesiculitis of the nonbacterial type. Now we will discuss the second type, the bacterial type of seminal vesiculitis.

BACTERIAL SEMINAL VESICULITIS.

In the bacterial type of seminal vesiculitis the gonococcus is most frequently the offending organism. The other organisms present are staphylococci, colon bacilli and tubercle bacilli. The Spirocheta pallida has been considered by some as an occasional factor. Personally, I have had no cases that I could say were caused by Spirocheta pallida. In the study of infectious seminal vesiculitis one can say that many cases are primarily of gonococcus origin. However, after the process has lasted for some time and has become subacute or chronic, the gonococcus has disappeared and other bacteria, especially colon bacilli and staphylococci, are found in the seminal vesicles. In some individuals all of these bacteria have at some time or another played a part, one bacterium starting the inflammation and another finishing it, so to speak.

The usual method of infection of the seminal vesicles with gonococci is as follows: All gonococcus infections are as a rule in the anterior urethra for a number of days, then they pass through the posterior urethra, ejaculatory duct and finally the seminal vesicles. This rapid spread of the gonococcus, within a short time into the seminal vesicles, is usually an acute process and goes along with the acute infectious process of the urethra. However, there is another method and this is brought about as follows: An acute anteroposterior gonorrhea subsides and leaves behind a slumbering chronic inflammation. This inflammation was gradually spread through the ejaculatory duct into the seminal vesicles and results in a chronic seminal vesiculitis with or without gonococci. In this type staphylococci are more likely to be present.

In the acute tumefaction of the seminal vesicles during an acute gonococcus infection where the seminal vesicles are distended hot, bulging, tumefied, and the patient has a high temperature with chills, fever and other manifestations, whether the condition goes on to abscess formation of the postprostatic rectovesical space or not, it is easy to demonstrate the gonococcus and its associate, the staphylococcus.

The acute type of gonorrheal seminal vesiculitis is a rapid fulminating type of infection. The symptoms are high temperature, increased pulse rate, pain and tenderness on pressure over the bladder and of course all of the symptoms of acute anteroposterior urethritis. Examination of the postprostatic rectovesical space may show to the palpating finger one or both of the seminal vesicles distended, dilated, enlarged, bulging, hot and exquisitively tender. In some cases the sacs may fill up the entire space and in marked cases the sacs may become soft, fluctuating and develop into an abscess. In the type of case going on to an abscess you may have not only frequency of urination but also difficulty in urination, accompanied by severe pain in the rectum and the patient may have a subjective feeling of a mass in the rectum. In fact, the patient may void in drops or have incontinence and finally retention of urine. Difficulty in defecation is occasionally present. Of all of the subjective symptoms of abscess formation, retention of urine and difficulty of defecation are, to my mind, the most important, if accompanied by fever symptoms. Physical examination by means of the finger in the postprostatic rectovesical space is the most important part of the examination. A mass can be palpated in the early stage of its formation. It can be felt as being the seminal vesicle or in its vicinity. This mass gradually spreads until it may occupy the whole of this space. This mass is extremely tender and has a doughy consistency. In some cases this mass must be incised, the operation being almost the same as a seminal vesiculotomy. In other cases this infection may break through into the rectum, bladder or urethra. In such an eventuality it may leave behind it a sinus. In other cases it gradually resolves by emptying its contents into the urethra through the ejaculatory ducts. In the cases where it slowly drains itself into the urethra it leaves behind a large infiltrated sclerotic seminal vesiculitis, with involvement of part or all of the postprostatic rectovesical space. In such an eventuality it would take months to cure such a patient. I am treating a dentist today who was infected about two years ago with gonorrhea and a marked tumefaction developed in this space. It was allowed to resolve without operation and eventually resulted in a tumefaction of sclerotic type as described above. After months of treatment cultures were negative for gonococci. Today the process has softened down considerably and has begun to approach the normal consistancy. These are the cases that are usually called prostatic abscesses. Palpation of these cases in the early stage of the abscess formation will readily prove that the abscess commences in the seminal vesicle and not in the prostate in the majority of these cases.

As previously mentioned, seminal vesiculitis may be acute, subacute or chronic. We have already described the acute and the hyperacute forms, the latter resulting in an abscess. The symptoms of seminal vesiculitis are general or local. The general subjective symptoms apply to every organ in the body taking in each system from the head down to the toes. The local subjective symptoms refer to those of the genitourinary tract. The physical signs are those made out by the finger in the rectum, mapping out by palpation definite lesions of the seminal vesicle. The subjective symptoms, either general or local or both combined, may cause one to suspect seminal vesiculitis, but palpation by means of the index finger either includes or excludes the diagnosis.

As previously stated, in acute seminal vesiculitis the symptoms are those of fever plus general or local symptoms or both general and local, plus the physical signs of a hot, tender, dilated, tumefied seminal vesicle. The temperature may range from 100° to 104° F. The patient complains of pains over the back, sacral region, a heavy dull dragging aching sensation, and that this aching back pain saps his entire strength. Pain over the bladder region or in the perineum is frequently complained of; the bladder and perineal pain also being of about the same character as that over the back, except in those cases where the acute inflammation has gone on to abscess formation where the pain may be of a throbbing, pumping sensation in the perineum. The latter symptom, however, may not be present even in the case of a large abscess of the seminal vesicle. From the associated urethritis he may have frequent painful urination accompanied by terminal bleeding. Urethral discharge may or may not be present. The patient may also have radiating pains down the cord into the testicle, into the penis, down the rectum or perineum or thighs. A number of these patients suffer with painful night emissions, at times bloody. Others suffer with painful erections. Some are almost in a constant state of priapism. Urination may be frequent during the day or night, or both. Sometimes these patients are only able to void a few drops at a time, at other times they go on to incontinence. In others retention may occur because of severe spasm and pain. This symptom is more likely to occur if an abscess is present. Where an abscess develops the patient may have a feeling of fullness in the rectum and desire to strain, yet suffering from constipation and great pain when the fecal mass tries to pass the abscess mass. If the acute vesiculitis resolves the temperature drops and the condition may resolve or it may go into chronic vesiculitis.

In the subacute type the symptoms are likely to partake of symptoms of the chronic vesiculitis. In chronic seminal vesiculitis cultures taken during seminal vesiculotomy the gonococcus is not usually found, but instead the staphylococcus or colon bacillus. Whether this can be explained on the Rosenow theory of the transmutation of bacteria in which the gonococcus is changed into the staphylococcus or whether the walls of the seminal vesicles, being devitalized by the previous gonococcus infection, the soil is made fertile for other bacteria, it is impossible to state. Personally, I believe that the latter is the true explanation.

The symptoms of chronic vesiculitis may be general, local or arthritic. In taking up the general symptoms of a well marked case of chronic seminal vesiculitis, it would not be amiss to state that the patient may have any symptom or all the symptoms that a human being is heir to. He may refer his symptoms to each and every part of his body. In fact, this type of patient is called a neurasthenic by some, and is not infrequently a sufferer from chronic seminal vesiculitis. I have frequently shown this type of patient to the students and have wilfully suggested subjective symptoms to these sufferers, such as pains behind the ears, feeling of pressure in the nose and others. In many of these cases the patients have applied in the affirmative to these questions. In other words, they immediately felt that they had the symptoms to which I referred, even though they probably never thought of them prior to my suggestion. I shall, however, mention some of the general symptoms more frequently encountered in the clinical study of this disease.

The patient not infrequently complains of general weakness, headache, dizziness, facial neuralgia, inability to concentrate, brooding deeply about his condition even while at work, inefficiency at his daily occupation so that he loses one position after another. This causes additional discouragement, so that he feels that he is of no value to society. Most of these patients are timid and afraid to look any one into the eye, especially afraid to meet socially the opposite sex. Some retire even from the company of males, fearing that their diseased sexual apparatus will be discovered by their associates. Some entirely give up work, losing all interest in life. The only one with whom they are not timid is the doctor, whom they almost bore with their myriad questions and complaints. At times they try our patience to the utmost and one almost become discouraged himself. In the type where the neurotic element predominates, it is most important to give, in addition to the local treatment, psychological encouragement. My exexperience has been that the Russian Jew and the Italian, as a rule, have subjective symptoms, especially neurotic symptoms, out of proportion to the physical signs obtained by examining the seminal vesicle.

Some of these patients even go on to suicide. Many patients with seminal vesiculitis suffer with gastrointestinal disturbances, eructations of gas, constipation, epigastric distress, nausea, or weakness of the lower extremities, so that the patient says he cannot walk any distance. Others state they cannot use the upper extremities, cannot grasp objects firmly or hold them when grasped: Still others complain of poor vision, spots before the eyes, ringing in the ears or poor hearing. Some complain of diminished sense of taste or smell. On the other hand, some of these patients imagine they smell foreign and nasty odors. Not infrequently they will state that their urine or their genitals smell badly. Yet, after trying to prove their statement, you will find that no smell is present.

Symptoms directed toward the genito urinary apparatus are usually the ones which bring the patient to the office of the urologist, while the general symptoms are more likely to cause the patient to seek aid either from the general practitioner or the neurologist. If seeking aid from the neurologist, his condition is diagnosed as some functional disturbance and he may receive high frequency hydrotherapeutic treatment. But the true organic nature of the condition is not suspected. I will also say without fear of contradiction that all the electrical instruments and hydrotherapeutic measures give no results to these patients, unless, in addition, the seminal vesicles are treated. I have had the opportunity of examining many such cases of the most extreme grade of sclerosis of the seminal vesicles, yet found that they had been treated for sexual neurasthenia for a long period before coming under observation.

The local symptoms may be pain over any part of the genitourinary apparatus, pain over the kidneys, sacral region, testicle, penis, rectum, down the sciatic nerve, over the pubic or inguinal region. Some patients continuously complain of pain over one definite area; other patients have shifting pains; one day it is at the pubic area, the next day at the inguinal region, etc. Sexual symptoms are not an infrequent cause of complaint. Sexual desire may be increased. Because of the inflammation of the seminal vesicles patients have irritation and constant impulses of sexuality are sent out, with the result that they desire frequent intercourse. Unfortunately in many cases these patients cannot be satisfied sexually either after or during the act. In other words, there is not the satisfaction and completeness to the act that other healthy people experience. No sooner are they through with one act than they crave another and still another, and so on. No matter how frequently they may have intercourse, they remain unsatisfied. These patients are in great demand by the underworld, especially by the nymphomaniacs because of their supposed sexual prowess. In fact, in this irritative stage, these patients pride themselves on their great sexual proclivities. But unfortunately each sexual bout only adds extra irritation and extra trauma, and they soon come to the end of their sexual rope. The sexual power gradually wanes and finally they become impotent while still young. Such a case, if examined while the patient is still in the irritative stage, will show marked tenderness and infiltration of the seminal vesicles; but examined later on when the patient is impotent, he will show marked sclerosis of the seminal vesicles without tenderness. In other words, when induration and sclerosis of the seminal vesicles are marked and tenderness on palpation of these sacs no longer is present, then prognosis for recovery of sexual power is poor, no matter what treatment is given.

As mentioned, these patients may go about their daily occupation with a constant erection. Some of them suffer with priapism.

Some of these patients are subject to frequent night emissions, accompanied by pain during the emission or pain increased in the regions where they usually have pain in the sacral inguinal regions. Others are subject to frequent night emissions without pain or any discomfort either during the act or following. In some of these cases only a sensation of emission takes place, little or no fluid being ejaculated either during sexual intercourse or during an emission. Apparently there is no control over these emissions, because I have had patients try their utmost to prevent their occurrence without their being successful. In some cases these emissions are bloody, in others they may be purulent.

Urethral discharge is not infrequently present as a symptom of seminal vesiculitis. Many patients complain of spermatorrhea, which, as you all know, is only a symptom and not a disease. One still sees cases reported as spermatorrhea as if it were a disease instead of a symptom. The patient usually notices the appearance of a thick fluid at the meatus when straining at stool. There are other cases where this may occur at the end of urination. In other cases spermatorrhea can only be diagnosed by finding spermatozoa in the urine, even though no sexual intercourse or excitement has taken place. This is due to the atonic condition of the walls of the seminal vesicles accompanying seminal vesiculitis. In other cases the atony, accompanied by the pressure of the hardened feces, passing down the rectum, simply acts as the index finger and strips the seminal vesicles. To my mind this is an effort on the part of Nature to strip the sacs. But as a symptom it means that there is a disease of the seminal vesicles, and such loss of muscular tone that the sacs are readily emptied by the slightest pressure in that region without regard to sexual stimulation.

The symptom, as a rule, which is most likely to bring the patient to the office, is impotence, either partial or complete. By partial impotence I mean that the sexual act is imperfect, either poor erections or erections that last only a short time, or any diminution of the intensity of the orgasm, or an impairment of any part of the act. In some patients a good erection is obtained, but they ejaculate before vaginal entrance or shortly thereafter, in that way having an imperfect orgasm and causing an absolute failure in the mate because of precipitancy. In still other cases ejaculation occurs before the vaginal entrance. Premature ejaculation which occurs so soon that entrance is not affected is really almost an absolute impotence. Some patients, however, are unable to obtain erection at the time of attempted intercourse, and yet are able to have erections at other times. A peculiarity often observed in these cases is that, in spite of the fact that these patients find that they suffer with a complete or a partial impotency, they nevertheless persist in frequent attempts, in fact, more frequently than the potent normal male, simply trying to succeed by forcing the issue, so to speak. These frequent attempts with failure simply cause more damage, and the more often this is repeated the greater the damage. The surgical rule of putting an acutely inflamed part at rest applies equally well to these cases, and it is thus explained to the patient. So that the very first order to the patient is to interdict sexual intercourse and all sexual stimulation.

URINARY SYMPTOMS.

The urinary symptom of seminal vesiculitis may be frequency, urgency, pain at the end of urination, diminution in the size of the stream, patient even voiding only in drops, and, finally, because of spasm and pain, even retention may take place.

In other words, the symptoms of seminal vesiculitis, either general or local, may be multitudinous, but in the diagnosis one considers the history, symptoms and examination of the postprostatic rectovesical space. The last is the diagnostic sign of greatest importance. If that is negative all the previous symptoms and history are useless as far as the diagnosis of seminal vesiculitis is concerned.

It is always necessary in treating patients with sexual symptoms to remember that there are many cases that are what we call, for want of a better name, functional. If the postprostatic rectovesical space is found negative, and the urethra and bladder negative, and no lesion can be found in the cerebrospinal system, the other systems are also gone over, and, if found negative, the presumptive evidence is that one is dealing with a case of functional disturbance of the sexual apparatus. In other words, the urologist who is unfamiliar or who has not mastered examination of this space is unable to diagnose those conditions or diseases, as the entire diagnosis rests on palpation plus interpretation of one's findings.

In the acute cases, as previously mentioned, one feels the two bulging, dilated, hot, leechlike bodies, off to the side of the prostate in the rectovesical space. In the subacute stage these vesicles are usually not so distended and not so tender. In the chronic, catarrhal type of case the seminal vesicles stand out as mentioned, full and engorged but decidedly less tender than the acute. In the chronic, sclerotic type, one or both seminal vesicles stand out distinctly and feel as thickened, hardened bands. To the finger tip there is considerable resistance, and it feels hard instead of soft and doughy. This feel is difficult to describe, and can only be obtained by experience. It is advisable to first palpate normal seminal vesicles, in fact, great numbers of them; then when one palpates diseased sacs one can appreciate the difference. After the process has spread outside the walls of the seminal vesicles to the connective tissue between the two and over the prostate, all one can feel is a large mass of hard, connective tissue infiltrating and involving the entire rectovesical space and extending over the prostate. In this hard terminal stage one is no longer able to palpate the individual seminal vesicles. This is the case with the worst prognosis. This is the type of case that will take a long time to cure.

My experience, as far as pathological lesions are concerned, is that the noninfective types of seminal vesicles may result in just as severe and extensive lesions as may the infective, with the exception of nonabscess formation. In other words, it seems to me that the young man is between two dangers: Scylla, if he masturbates and seminal vesiculitis develops, or Charybdis, if he has intercourse and gonorrhea develops with seminal vesiculitis. However, I believe that seminal vesiculitis following gonorrhea is much more frequent than seminal vesiculitis following masturbation. In other words, I believe that many masturbate and yet fate is with them, while the majority of those who have promiscuous intercourse eventually become infected. As to the frequency of seminal vesiculitis in gonorrhea, I am unable to state in percentage the occurrence of seminal vesiculitis, but I believe that ninety per cent. of gonorrhea is anteroposterior after the third and fourth week. It needs no stretch of the imagination to conceive of the great chance gonococci have of going down into the ejaculatory ducts and finally into the seminal vesicles, and secondarily infecting them. As mentioned, the gonococcus may do this during the acute fulminating stage or in the chronic stage of urethritis. The low grade posterior urethral process may slowly spread into the ejaculatory ducts to the seminal vesicles, in the former case resulting in acute seminal vesiculitis and the latter subacute or chronic seminal vesiculitis.

The gonococcus infection of the seminal vesicles may be described as a vicious circle. Primarily, as you all know, the gonococcus is deposited on the surface of the meatus. After a time it works down into the deeper layers of the mucous membrane and hits the bloodvessels. Then promptly there is a pouring out of pus, the gonococcus traveling along the anterior urethra to the cutoff muscle detained there for a while and then into the posterior urethra. In many cases the gonococcus does not need to travel toward the posterior urethra but is pushed there with great speed and considerable force by the high Valentine irrigator. Once in the posterior urethra, the gonococcus commits the same violence and assault as in the anterior urethra only with added vim and increased vigor. The various ducts, the prostatic and the ejaculatory being opened, the gonococcus has its choice. As stated, the gonococcus quite frequently chosses the ejaculatory duct and seminal vesicles. What happens? The anterior urethra clears up and possibly the posterior urethra also, but a mucopurulent discharge persists. Why? Because the cesspool behind, namely, the seminal vesicle, is constantly draining its detritus, dead epithelial cells, pus cells, dead and living bacteria into the posterior urethra. In other words, while primarily the infection spread from before backwards, it is now spreading from behind forward. Until the seminal vesicles are cured no improvement in the urethritis can take place and yet, how repeatedly we see patients' anterior or posterior urethras treated with injections for months or for years and no improvement takes place for the reasons mentioned. After the seminal vesicles are cleared up the posterior urethral inflammation often clears up by itself; if not, then instillations of silver nitrate and sounds rapidly clear up the slumbering trouble in the posterior urethra.

TUBERCULOUS SEMINAL VESICULITIS.

The rectal feel of the tuberculous seminal vesicles may be the same as described for acute, subacute or chronic seminal vesiculitis. If such is the case, there may be no particular diagnostic point in its detection as tuberculous seminal vesiculitis. However, a certain number of cases of tuberculous seminal vesiculitis have a characteristic nodulation along the seminal vesicle that speaks for tuberculosis only. The other points that help in the diagnosis of tuberculous seminal vesiculitis are thickened or inflamed epididymi, nongonorrheal in origin, or occasionally the presence of nodulation in the epididymis or reaction out of proportion to instrumentation, either in the case of instruments in the urethra or stripping of the seminal vesicles. The further aids may be tubercle bacilli in the urine or guineapig inoculation.

I believe that a certain number of cases of tuberculosis of the seminal vesicles follow and are engrafted upon a gonococcus infection. This is of great practical importance because not infrequently one deals with a typical gonococcal infection at the outset; the patient apparently does well for a while, then appears to relapse and a gradual recurrence of acute symptoms takes place with marked strangury, tenesmus, frequent urgency and possibly recurrence of profuse discharge. Bloody urine after gently stripping seminal vesicles or gently passing a sound should make one suspicious of tuberculosis of the genitourinary tract. The characteristic point about these symptoms is that the reaction is out of proportion to the instrumentation. When such is the case then one must begin to suspect tuberculosis of the genitourinary tract. This is an important diagnostic symptom. These reactionary symptoms are also important from a therapeutic viewpoint because we never strip tuberculous seminal vesicles nor do we massage tuberculous prostates. Because by so doing one is likely to stir up an inactive or subacute or chronic process into an active acute one. This acute process may result in an abscess or a rapid spreading of the tuberculous process into the testicle, urethra, bladder, kidneys, or elsewhere.

TREATMENT.

Treatment of the seminal vesicles resolves itself into two divisions; first, general treatment; second, local. General treatment for the most part has to do with either putting the patient into a good general physical condition; secondly in the neurotic type of cases of using psychological encouragement, as in some individuals the mental aspect of the disease is marked. Now as to putting them into a good general condition, the idea of treatment is to give the undernourished individuals plenty of nourishment in the form of eggs, milk, cream and meat, that is, if the symptoms are not acute and there is no contraindication to meat. I have noticed that many patients after a siege of gonorrhea are anemic, below weight and undernourished, and on careful inquiry I have ascertained that during the course of their disease they have been underfed by medical orders. That is, their medical attendant had cut out so many articles of food without substituting others that the patient had not had enough calories of food for good health and for combating his disease. In these cases I add extra food, fresh air, weekends in the country or if much run down, a rest of ten or twenty days in the open air before treatment is begun. The overfed, alcoholic, plethoric individuals are treated by cutting down the food and ordering exercise. The neurotic patient receives encouragement in addition to his local treatment.

These people (i. e., the Italians and Russian Jews) when they receive their gonococcal infection are usually undernourished, overworked sweatshop workers and foreigners in our country. In some cases they have left their wives on the other side of the Atlantic, meanwhile waiting until they can afford to have them brought over here. The knowledge of their gonococcal infection has shocked them dreadfully especially when they are informed that they will not be able to have intercourse for months. Many of them have received poor treatment or what is just as bad, overtreatment. Others are studying at night in addition to working hard all day. Many of them live in tenement houses, have little air or sunlight. Considering that all of these factors may be present in the one case, combined with the hereditary neurotic element of the race, these individuals are the most pitiable humans I have ever seen. One must try to get rid of as many of these contributing factors as possible. One also must encourage such a patient in addition to treating him. For the sake of emphasis I will repeat that the Russian Jew or the Italian with a mild catarrhal seminal vesiculitis will have more neurotic symptoms than the Scandinavian or Irishman with a sclerosis of the seminal vesicles.

The local treatment for seminal vesiculitis is stripping of the seminal vesicles. The method of stripping seminal vesicles has been described under the examination of the postprostatic rectovesical space, the only difference being that stripping is performed twice on each seminal vesical while ordinary examination is but once on each seminal vesicle. In other words, the act of stripping is to strip the contents of the seminal vesicles downward, forward and outward into the ejaculatory duct and urethra. The contents expressed from the seminal vesicles either appear dripping out at the meatus or are voided in the urine afterwards. Sometimes both take place, namely, some of the expressed seminal vesicular fluid appearing in the urine and the remainder dropping out of the urethra before urination.

What is the object of the treatment? The results of stripping seminal vesicles vary according to the pathological condition present. In the catarrhal seminal vesiculitis the object of stripping is the following:

First, the fingertip strips the contents of the seminal vesicle from its very top down to the lower end of the seminal vesicle; the contents are stripped into the ejaculatory duct and from there outward into the urethra and the outside world. By stripping the contents of the seminal vesicles which may consist of mucus, pus, degenerated epithelial cells, red blood cells and bacteria, one gets rid of a lot of material which is plugging up the sacules of the seminal vesicles and causing distention of the same. Thus one diminishes the accompanying pressure symptoms with its symptoms of pain. One also diminishes or gets rid of the absorptive symptoms, either focal symptoms in the various joints or general symptoms.

Second, this stripping having emptied out the plugged up sacs, promotes drainage, the mucus, pus, dead and live bacteria, and other débris have a better chance to drain out of the sac since the previously plugged sac is now empty.

Third, the act of stripping is supposed to bring a fresh supply of blood to the seminal vesicles and in this way promotes healing.

There is a fourth benefit from stripping but that applies only to sclerotic seminal vesicles. In the chronic sclerotic seminal vesicles by stripping you break up connective tissue adhesions. It is absolutely essential to loosen these bands of connective tissue, which bind down the seminal vesicles and thus prevent these sacs from contracting in their long diameter during the act of intercourse. One of the causes of impotency in chronic sclerous seminal vesiculitis is the failure of contraction of the seminal vesicles because these connective tissue bands are binding down the vesicles. In fact, in those cases of seminal vesiculitis which are engulfed in an enormous mass of connective tissue it is very difficult to really strip seminal vesicles of their contents because interposed between your finger and the seminal vesicle is first the rectal wall, second, a large mass of connective tissue. So that in attempting to strip this type of sclerotic seminal vesicle you do not really empty the sac, nor do you cause better drainage, nor can you really exert enough pressure on the sac to bring a free supply of blood to the part until many months of treatment, the reason being as above mentioned, that at the outset of treatment of sclerous seminal vesiculitis, one's finger cannot do any more than break up connective tissue adhesions. After months of treatment these bands are broken up and the seminal vesicles become softer. Then one begins to get the entire four benefits from the act of stripping, namely, first, better drainage; second, fresh blood supply; third, getting rid of detritus; fourth, breaking up connective tissue adhesions.

In other words, in the catarrhal seminal vesiculitis, even before one commences to strip the seminal vesicles, one may find urine full of shreds of pus and mucus, directly after stripping of the seminal vesicles, one will find large clumpy masses of pus, while in the sclerotic seminal vesicle one may find urine both before and after stripping perfectly clear.

In the most advanced cases of sclerous seminal vesiculitis, all the urine that the patient voids either before stripping or after is clear because, as a rule, drainage is poor since the entire vesicle is bound down with connective tissue and the seminal vesicle lumen is practically obliterated and converted into a band instead of a tube.

In treating cases of seminal vesiculitis it is always well to bear in mind that the amount of pressure used in stripping varies in the different types of disease. In the acute seminal vesiculitis patients are put to bed, hot rectal irrigations, saline cathartics and a fluid diet are administered. In the chronic cases, the catarrhal type receive very mild stripping, but in the sclerotic type, where there is great induration, a considerable amount of pressure is necessary in order to affect a cure. In general, one might say that at the outset of treatment of any case it is best to use only moderate pressure with the finger tip and as the case goes on the pressure is increased. When in doubt use only moderate pressure.

With new clinical assistants it is not unusual to get a number of cases of proctitis, abscesses, fissures and fistulæ following imperfect technic in stripping seminal vesicles. Those cases that are difficult to reach are advised to report for treatment with a full bladder of urine. This helps distention and forces the seminal vesicles nearer to the examining finger. The left hand in these cases can be pressed down over the hypogastrium, that also forces the bladder and seminal vesicles downward toward the examining right index finger within the rectum. Seminal vesicles are stripped very fifth to seventh day, not more frequently. Many cases are stripped only once a week because they are stirred up by too frequent treatment. It is surprising how many of our confrères are not familiar with this fact and strip seminal vesicles or massage prostates every other day. By giving too frequent treatments they cause mechanical irritation to the seminal vesicles and thereby do not give nature a chance to cure the affected organs.

The duration of treatment, as a rule, varies in different cases. A catarrhal case of seminal vesiculitis takes about eight to twelve weeks, while a sclerosis may take from six months to one year.

The prognosis for a cure is good so far as infectivity and disappearance of symptoms are concerned. As far as the pathological changes are concerned one can say that in both the catarrhal and the sclerous seminal vesiculitis, the improvement in the feel is as a rule quite satisfactory, but one must admit that some of the pathological changes are permanent, and these organs, considered from the pathological viewpoint, are not so good as new. But for all practical purposes the patient is reclaimed amongst the happy, contented, sexually potent males. Some, however, are incurable. They have waited until the damage is irreparable. One can base some opinion on prognosis according to rectal feel. If seminal vesicles are markedly sclerotic and all tenderness on palpation is absent, then prognosis is poor. In males beyond forty years with a sclerotic seminal vesiculitis the prognosis is not so good as a catarrhal seminal vesiculitis, or any grade seminal vesiculitis at between twenty and thirty years of age. I have seen a considerable number of these patients married and with children as a result of their wedlock. These cases have, however, been discharged as cured. They certainly are a much happier lot of men than when first under observation. It is really surprising how much recovery takes place under treatment. I have also noticed that some individuals, after receiving what I considered a reasonable amount of treatment for sclerous seminal vesiculitis, would get to a point where further treatment would cause no additional improvement, yet on returning to a sexual life and then returning to the office months afterward, I would find that the sexual method of emptying the seminal vesicles had caused additional improvement and had, so to speak, put the finishing touch to the office treatment.

There are some who say that no case of gonorrheal seminal vesiculitis is ever cured. Personally, I am absolutely convinced that the greatest number of gonorrheal seminal vesiculitis cases are cured; that only a small percentage remain uncured. When I say uncured or incurable, I mean that these cases remain gonococcus carriers. I reported such a case a few years ago, in which the patient was a gonococcus carrier for a period of twelve years in spite of treatment at the hands of various doctors. This patient has seminal vesiculitis and prostatitis; cultures proved that gonococci were still present after twelve years. I feel, however, that incurable cases are the exceptions and not the rule, and I have proved this in a large number of cases where the cultures of the expressed seminal vesicular fluid eventually became negative for gonococci. Unfortunately, many of these cases, though showing no gonococci, harbor staphylococci or colon bacilli. A strong effort should be made to free patients of these accompanying bacteria before discharging them as cured. I have yet to see a case discharged as cured with cultures negative, who has infected his wife or mate, providing that in addition to having a number of negative cultures with one and two months' intervals, providing also that the patient was instructed to have a six months' rest from sexual intercourse before marrying. Why a six months' rest? For the following reasons:

There is no doctor living today who, after having taken cultures for gonococci and having found these cultures negative, could absolutely take an oath that no gonococci are present. But from clinical experience we have found that patients who take a six months' sexual and alcoholic rest are very apt to be cured after they are discharged as such. While, if they have sexual intercourse during this six months' sexual rest period, the physiological engorgement which takes place during sexual intercourse, combined with the fact that the urethral mucous membrane is a new membrane, having replaced the denuded, infected membrane, this engorgement stimulates the growth of possibly a few dormant or half dead gonococci to new life and, therefore, to a reinfection. While, if the patient abstains from intercourse, nature manages to kill these half dead gonococci and the patient goes on to an uneventful recovery, even though his seminal vesicles and prostate had been infected.

The great cause of so many relapses in these cases of gonorrhea of the seminal vesicles is due to the fact that the patient is discharged as cured and is not instructed in the subsequent sexual hygiene, and therefore promptly indulges in sexual intercourse, with resulting relapse. Others, almost immediately after being told that they are apparently cured, marry. For the reasons just mentioned they very promptly have a relapse and infect the bride on the wedding night or shortly thereafter. That is why the gynecologist thinks so few cases are really cured. With proper handling and proper advice the gonococcus is, as a rule, killed within a reasonable period, usually within six months to a year.

CONCLUSIONS.

1. Seminal vesiculitis may be either an infectious or a noninfectious process, either at the outset or through its course. The noninfectious type may subsequently become infected.

2. The noninfectious type may result in just as severe pathological lesions as the infectious, and is usually due to wrong sexual hygiene.

3. The most frequent cause of the infectious type is the gonococcus, which travels at the outset from before backwards; that is, from the urethra to the seminal vesicles; subsequently it travels from behind forward, that is, from the seminal vesicles to the posterior urethra, in this manner establishing a vicious circle.

4. Because of the proximity of the rectum, the colon bacillus may infect the seminal vesicles, either alone, without any other infecting organism, or while the gonococcus is present, or after the gonococcus has devitalized the seminal vesicle but has itself disappeared.

5. Too few medical men give this organ the thought that it deserves in searching for a focal infection.

6. Others, although cognizant of the possibility of the focal infection causing general or arthritic symptoms, are not familiar with the examination of the postprostatic rectovesical space and, therefore, cannot interpret their findings.

7. One cannot practise urology successfully unless he is able to map out the organs in this space.

8. Tuberculous seminal vesicles are not to be stripped or operated upon.

9. Ninety-five per cent. of seminal vesicles can be successfully palpated if the urologist has mastered the art. This statement is made although I know that there are authorities to the contrary.

10. In the sclerous tumefied seminal vesiculitis, all the urine, either before or after the stripping of the seminal vesicles, may be clear and show no detritus, because drainage is imperfect and because the rectum and a thick band of connective tissue is interposed between one's finger and the seminal vesicles proper.

40 EAST FORTY-FIRST STREET.

Methods of Examining for Spermatozoa in the Diagnosis and Treatment of Sterility*

By MAX HUHNER, M. D.,
New York.
Chief of Clinic, Genitourinary Department, Mount Sinai Hospital Dispensary.

The examination of human semen for the purpose of determining the fructifying capacity of the male may be accomplished in one of two ways: by the examination of the semen brought to us in a condom shortly after ejaculation, and by the examination of specimens of semen obtained directly from the female genitals at various periods after coitus. This latter method I have developed extensively, and while, in my original article on the subject (16), I designated it The Spermatozoa Test in Sterility, almost every author who has referred to it has called it the Huhner Test, and it will be so designated in the present paper.

THE EXAMINATION OF CONDOM SPECIMENS.

In the procuring of a condom specimen, there are certain details which, if neglected, may vitiate the entire result of the examination, and may lead to wrong deductions. I make no apology, therefore, for describing in detail my method of procedure and calling attention to certain errors and pitfalls which may occur in other methods now in vogue.

After the condom with its contents has been removed from the penis it should be tied with a string. This might appear obvious, but many a condom has been brought to me with its contents spilt in the towel or handkerchief for want of this precaution. Many patients make a knot with the top of the condom itself, but this is not sufficient to prevent spilling of the contents.

As soon as the condom has been tied as directed, it should be placed between the warm bed pillows until ready for transportation. A large towel may also be placed between the same pillows. As soon as the patient or his wife is ready to come to the office, the condom should be placed within the towel, and the entire package placed next to the breast, as near the body as possible, to keep it warm during transportation. This precaution is especially necessary during cold weather. Some gynecologists recommend placing the condom in the vagina, but this procedure is cumbersome for the patient, and the condom is likely to break. The method I have just described is simple, and there is no danger of the spermatozoa dying from cold.

Some specialists have advised placing the condom in warm water to preserve the vitality of the spermatozoa. Many more or less complicated methods have been devised with this object in view. Thus one authority (3) describes his technic as follows: "The patient provides himself with the following articles: condoms, a wide mouthed bottle like a petrolatum bottle, and a jar which may be made watertight. Upon the morning when the examination is to be made the doctor should be notified so that he may be prepared to work promptly. After intercourse the condom containing the specimen is placed in the wide mouthed bottle and this is carefully corked. The bottle containing the condom should then be placed in the jar which should contain water a few degrees warmer than body temperature. The jar is then immediately taken to the office of the physician. These precautions are necessary to maintain the warmth of the specimen. Upon delivery at the office, the bottle containing the specimen is removed from the jar and placed in a warm but not a hot bath. The examination should begin at once. The base of the condom is opened with scissors and the specimen is allowed to escape into a dry bottle or warm test tube, etc."

I would especially warn against this method of procedure. If every man or woman were an expert bacteriologist or chemist, the method might not be so objectionable, but even then it is unncessarily clumsy and complicated. But unfortunately the average lay person is neither a bacteriologist nor a chemist. One point must be distinctly emphasized, and that is that while spermatozoa can stand some cold, they are exceedingly sensitive to heat; a slightly increased temperature is enough to kill them. While the chemist or bacteriologist can tell with his thermometer, or even without it, what a few degrees above body temperature is, the average person in his fear of freezing the specimen, will generally have the water much too hot and kill the spermatozoa. I am not talking theoretically, but as the result of much actual experience in handling and examining many specimens.

When the specimen arrives at the office, it should not be removed from the towel until everything is in readiness for the examination. The microscope must be in position and several slides and cover glasses must be clean and ready to receive the specimen.

---

*Read at a meeting of the Genitourinary Section of the New York Academy of Medicine, December 15, 1920.

Right here I wish to lay stress upon a remark which I deem of some importance. For the ordinary examination of semen, only an ordinary microscope with high and low power lenses is necessary. There are some writers who try to make it appear that the examination of semen requires expert method and special instrumentation. I desire to protest most emphatically against any such suggestion. We need no warm stage apparatus, or anything else to keep the specimen in condition during the examination. Some of these writers even lay stress upon such complicated methods, which sometimes has the effect of discouraging the average physician from making the examination himself, and encourages him to send it to the expert. This is wrong. Any ordinary physician, with ordinary technic and apparatus, can examine semen for live and dead spermatozoa. The doctor's office, even in winter, is warm, and the rubbing of the slides and cover glasses during the process of cleaning is enough to warm them to the proper temperature. If the specimen has been collected and cared for as above described, there is no danger that it will freeze during the examination. For a study of spermatozoa for experimental and scientific purposes, oil immersion lenses and various scientific and chemical apparatus may be necessary, but for the ordinary examination for diagnosis no such detail need be employed.

When everything is in readiness, we may proceed to procure the specimen. I have always found that the more complicated the method, the more the specimen is poured from dish to dish, the worse the result. The only instrument I employ is one of Becton, Dickinson's large pipettes.

I untie or cut the cord with which the condom is fastened, insert the pipette, suck up its contents, allow the first drop to escape, and then deposit a drop on the slide, which I cover with the cover glass. While examining this specimen, I enclose the pipette in the towel, so as to keep it warm if more specimens are to be examined. Nothing can be more simple or more efficacious than this procedure.

For the examination of the specimen, I employ the high power No. 6 Leitz lens, with No. 4 Leitz objective. In an abnormal specimen, where there are very few spermatozoa, I first find one live spermatozoa with the high power lens, then focus on this with the low power lens, and while under low power, I look around for a possible better field, and then return to the high power.

I first note the general appearance of the field. In a normal specimen, we should at once see innumerable spermatozoon dashing about very rapidly hither and thither. Whenever we have to search for spermatozoa, the specimen is abnormal. There are no two ways about it, either you see them or you do not. No staining is necessary or advisable.

If, however, instead we see at once a large number of spermatic crystals (Böttcher's crystals) we can at once make up our minds that the spermatozoa are either dead or absent. These crystals may be present even in normal semen, but they are very few and far between. In an abnormal specimen they are entirely in preponderance, and are found in every field. We can thus rapidly diagnose, in a general way, the normal from the abnormal.

The theory of the formation of these crystals is as follows: A moving fluid does not crystalize, or does not do it as rapidly as a still fluid. Therefore in semen containing many moving spermatozoa, these crystals either do not form at all or do so very slowly, whereas they are formed rapidly and in large numbers in semen in which there are no spermatozoa at all, or only dead spermatozoa. Eventually, even normal semen will show them when all the spermatozoa have either lost their motion or are only moving feebly. It is the early formation of these crystals that stamps the specimen as pathological.

Having noted the general appearance of the specimen as a whole, we now look more carefully for details. A large number of pus cells is abnormal, and should they be associated with dead, feeble or absent spermatozoa, we might say in a general way that there is some pathological condition in the male sexual apparatus which should be investigated. I have shown heretofore (15), as a result of many experiments, that pus itself does not interfere with the vitality of the spermatozoa or with fecundation. It is not the pus that has killed the spermatozoa in these cases but some pathological condition in the male genital apparatus which is the cause of both the pus and the pathological semen.

It cannot be too emphatically impressed upon the mind of the reader that the mere finding of a few active spermatozoa, or the finding of many feebly moving spermatozoa, does not absolve the male from sterility. Many inexperienced physicians do not see the importance of this. It is easy to say to the patient that it takes only a single spermatozoon to cause impregation, and as long as the specimen shows one live spermatozoon, impregnation is possible. When we consider, however, that with each normal ejaculation there are thrown into the female genitals more than three hundred million spermatozoa, in order that one shall reach the ovum, it is easy to calculate the chances of impregnation when only a few lively ones are ejaculated. In the normal course of events, millions of live spermatozoa are lost and killed in the vagina before ever reaching the cervical os. Very many die in the cervical canal, and of the large number of spermatozoa ejaculated, only a comparatively small quantity ever reach the fallopian tubes. I am not talking theoretically, but from practical experimentation and study. Even in normal cases, only comparatively few spermatozoa can be recovered from the uterine fundus.

There is another point in the examination of semen to which I desire to call attention, and that is the finding of dead spermatozoa. Most physicians attach no importance to this finding, but in fact it has great diagnostic significance, and ought to help us to decide the question of treatment. The finding of dead spermatozoa shows that there is no obstruction in either the epididymis or the vas. To perform epididymovasostomy in a case of sterility, when dead spermatozoa are found in the condom, is absolutely contraindicated, and still it has been done. In these cases we have to decide where and what kills the spermatozoa, and treat our patient accordingly. Inasmuch as this paper is devoted merely to the examination and search for spermatozoa, and is not on the treatment of sterility in general, this point cannot be gone into further.

In the examination of a specimen, one finds at times both immature and deformed spermatozoa. These are probably useless for purposes of impregnation, but they do not interefere with the potency of normal spermatozoa. They may be found in normal semen as well as in that of sterile cases. The main point in determining the fructifying power of human semen from a condom specimen is this: Are there a sufficient number of active spermatozoa? If there are, the semen is all right, and the addition of the abnormal varieties does not interfere with its potency.

To determine the answer to the above query, we must actually see an enormous number of very lively spermatozoa in every field. They must also show good motion, certainly during the time of an ordinary microscopical examination. This is all we ought reasonably to expect to be able to answer from a condom specimen. The actual fructifying value of the semen can best be determined by the Huhner test presently to be described.

When we watch spermatozoa in a drop of fresh semen under the microscope, we see them moving rapidly about, in a more or less indefinite manner. Reynolds has undertaken to have these spermatozoa watched for long periods of time, and has divided their movements into five classifications as follows:

"I. Initial Motion, i. e., motion as seen in fresh semen under favorable conditions, consists of a lashing of the after part of the tail from side to side which is so rapid as to constitute vibration. It produces rapid forward motion in a practically straight line, the head, middle piece and forward portion of the tail maintaining their position in the line of motion with practically no swaying from side to side. The action of the flagellum is so rapid that it is quite impossible to follow its individual movements. Spermatozoa swimming in this manner always head against a current and usually cross the field of observation in about five seconds in the absence of currents or obstacles. This type of motion will be described throughout the paper as progressive vibratile motion. Progressive vibratile motion is normally succeeded after a variable length of time by what I regard as the second phase of normal motion.

"The second movement differs from the first not only in its character but in markedly reduced speed. The tail movement alters to a long slow stroke from side to side and almost the whole length of the tail partakes in the stroke. This is, moreover, accompanied by swaying of the head and middle piece through an arc which is always considerable and may even equal ninety degrees. The general outline of the spermatozoa, from being practically straight with almost nondetectable sharp, quick, small arc vibration of the aftertail, has become an S in outline, with large, slow, plainly perceptible undulations traveling gradually backward throughout the length of the spermatozoon. Speed has been lost and direction seems to be more specifically determined by the surroundings. Individuals at this stage show a pronounced choice of direction, and go up to objects in the medium, from which they later make off as though the movement were determined by tactile reaction to some extent. This type of motion has therefore been named undulatory tactile in contradistinction to progressive vibratile.

"The third type of motion succeeds the second and consists in a tendency on the part of the spermatozoon to push itself against or into any small masses of cells, or sometimes other materials, which it may find in the neighborohood, bunting itself into any small cove it may find, and maintaining a slight burrowing motion by a lashing tail movement of the vibratile type not unlike the movements of the caudal fin of a fish. The movement of the flagellum in this third type is unlike the second type in that it is vibratile rather than lashing, but is slower than the vibratile motion of the first type and less limited to the afterpart of the tail. These spermatozoa are apparently not caught in the débris or unable to move off. From time to time they back out of such a cove, and seek another mooring place.

"This stationary bunting motion is less universal than the other two. Many individual spermatozoa fail to attain it. It seems probable that only the most vigorous individuals ever reach this stage. It has not been encountered in unmixed semen or in any artificial mediums. It has been observed only when the spermatozoon is in the secretions of the female genital tract. It is most frequent when the spermatozoon is in contact with a nest of epithelial cells.

"The fourth form of motion is regarded as abnormal and has been named rotary swimming. Certain specimens show many spermatozoa which move forward progressively and sometimes with fair rapidity, but with a spiral screwlike process. Rotary swimming may continue very vigorously and apparently for a considerable time. It has, however, been impossible to estimate its maximum duration, since it is practically extremely difficult to keep continuous track of one individual from injury to death. In slides which contain many of these forms, active rotary motion has been observed for from two to eight hours. Rotary swimming is very awkward and is easy to recognize, even with a sixteen mm. lens.

"The fifth form to be described is also abnormal. It is less common than the rotary swimming and is usually less general in a given field. In this the middle piece and upper tail seem to lose their flexibility and balance to a considerable degree, and the lower tail motion swings the forward part of the spermatozoon to and fro with a pendulum movement. Pendulum swimming yields very poor forward progress."

While these observations are very interesting from a scientific point of view, and reflect great credit on the perseverance and scientific acumen of the observer, it is not necessary to go to all this trouble and detail from a purely practical viewpoint.

There has been a tendency of late on the part of workers in this field to test the vitality of the spermatozoa by their rate of motility and their endurance as observed under the microscope. Thus, one observer watches a given spermatozoon, while his assistant stands with a stopwatch, and at a given signal determines how long it takes a certain spermatozoon to cross the field. This process is repeated with several spermatozoa, and an average is determined for that particular specimen of semen. Again, specimens of semen are also left under the microscope, with special precautions against drying, and kept at the proper temperature, and the time is noted how long the spermatozoa in any particular specimen survive.

Many years ago, I protested against this method of procedure from a purely practical standpoint. Mind, I am not saying a word against the scientific value of studying spermatozoa by this method. As I have previously emphasized, I have nothing but the most profound respect for the scientific spirit which goes to so much trouble to help us understand something more of the life history of the spermatozoon. What I do protest at, however, is the impression given, that by such cumbersome and time-taking examinations alone can we determine the value of semen in any particular case. Such impression tends to discourage the average practitioner from making any examination of semen at all. The more complicated an examination is, the less the tendency of the general practitioner to have anything to do with it.

Also, from a purely diagnostic point of view, I do not think that these time consuming examinations can at all compare in accuracy with the deductions to be obtained from the Huhner test, which I will presently describe in detail. For the present, however, let me remark, that what care we how long spermatozoa live under the artificial conditions of a microscopic stage, as long as we can determine absolutely accurately how long they live, or if they live at all, in the female genitals. Surely for practical purposes the latter deductions are of more value than the former. Moreover, with the Huhner test in each case we test the vitality of the husband's semen in the genitals of his own wife, which is of the most important practical diagnostic value.

Aside from the disadvantages of determining the value of semen by seeing how long the spermatozoa from a condom specimen survive under the microscope, I am convinced that the method is not at all reliable. I have in mind a case in which I removed live spermatozoa from the fundus uteri several days after coitus, and yet these spermatozoa died quite rapidly under the microscope. Those who would draw conclusions from the longevity of spermatozoa under the microscope would put down these spermatozoa as particularly poor in quality, but the fact that they survived for days in the fundus uteri proves conclusively that they were absolutely normal.

THE EXAMINATION OF SEMEN BY THE HUHNER TEST.

This test is simplicity itself. All it requires is a microscope, slides and cover glasses, the pipette already mentioned, and some intrauterine syringes in case we desire to obtain specimens from the fundus uteri.

The wife of the patient is ordered to the office as soon after coitus as possible, and of course instructed not to take a douche. She is placed in the ordinary gynecological position, a bivalve speculum is inserted, the cervix is brought into view, the pipette is applied to the cervical os, some of the cervical contents are sucked up and immediately placed on a slide, covered with a cover glass and examined. Often we at once see numerous lively spermatozoa, yet what a wealth of information is obtained from this few minutes' examination! What do we care whether the cervix is in its normal position or not, or whether we could reason out theoretically that the penis during coitus goes into this cul-de-sac or that, whether the vagina is very short or of excessive width or length—the living spermatozoa on the cervix tell us at once that for that particular penis the cervix is in the right position to catch the semen. Every year, I see many patients in my office who have been advised by their physicians to assume unusual positions during coitus with a view to aiding the spermatozoa in reaching the cervix. This question is solved at once with my test. Again, we do not care if the woman tells us that she does not become pregnant because all her husband's semen runs out of her vagina immediately after coitus, for we have positive proof before us that, no matter how much runs out, enough spermatozoa have reached the cervix for purposes of impregnation. What need we care, if informed that the husband suffers from rapid ejaculation, for again, we have positive proof before us that he can deposit his semen in the right place. Similarly, we need not worry about many other conditions which are commonly supposed to be the cause of sterility, such as diminution or absence of orgasm on the part of the woman, stricture of the urethra, epispadias, hypospadias, and other conditions in the male, for we have found live spermatozoa on the cervix, and we therefore know that none of these conditions have any influence in the case.

Likewise we need not worry over the possibility of the cervical or vaginal secretions being inimical to the vitality of the spermatozoa, nor need we subject these secretions to microscopical or chemical examination for this purpose, for again we know that they cannot be the cause of the sterility in this particular case. And so one may go through many of the theoretical ideas as to the etiology of sterility, and see how frequently they are dismissed as the result of this few minutes' examination. I may perhaps be pardoned for my enthusiasm concerning the test, but I really know of no other test from which so much valuable information can be gained in so short a time.

Suppose, however, that only dead spermatozoa are found on the cervix. We then examine a condom specimen, and if it contains dead spermatozoa only, we know the fault is with the husband; if live spermatozoa, however, are found in the condom, we know at once that something about the genital secretions of the female has killed the spermatozoa. Again we do not need to submit the secretions to time consuming chemical and microscopical examination to arrive at this conclusion, for we have the physiological proof right before us. Inasmuch as this is not a paper on the treatment of sterility, but primarily one on spermatozoa, it is beyond its province to go into treatment. I would merely mention in passing that, in the above state of affairs, if we find the vaginal or cervical secretions markedly acid and suspect that the hyperacidity is the cause of the death of the spermatozoa, we order a bicarbonate of soda douche to be taken before coitus, and make another test. If this second test shows live spermatozoa, we have not only made our diagnosis but have been informed how to preserve their vitality and how to cure the sterility.

If no spermatozoa at all are found in the cervix, the husband, in many instances, may still be at fault, even though live spermatozoa are found in the condom. This is again one of the most important and practical features of the test. Ordinarily, a normal condom specimen was considered absolute proof that the husband was not responsible for the sterility. A gynecological examination was then resorted to, and any slight deviation from the normal, such as an anteflexion, was at once seized upon as being the cause of the sterility, and the wife was subjected to prolonged treatment and even operation. Yet the husband might be suffering from a tight urethral stricture, in which case, at times no semen is ejaculated from the penis but remains behind the stricture to flow out when the penis has resumed its flaccid condition, a condom specimen showing absolutely normal semen. Or again, the husband may be suffering from rapid or premature ejaculation, or may have a hypospadias or epispadias, in which later conditions the semen is directed away from the cervical os, or even away from the vagina during coitus, and still the condom specimen will show nothing abnormal.

But the diagnostic value of the Huhner test is not limited to the cervix. We may look for spermatozoa as high up as the uterine fundus. At first blush, this seems impractical, as whatever specimen we obtain from the fundus is bound to be contaminated with that of the cervix. This objection, however, can be overcome by applying the technic which I have described at length in my book, and which will only be briefly referred to at present. After making very many experiments and observations, I have found that the spermatozoa deposited low down in the female genitals, that is, in the vagina and cervix, die within a few days. If therefore, after having demonstrated live spermatozoa in the cervix, we make another examination at a later date, but several days after coitus, and take the precaution of first taking specimens from the cervix, and if we find no or only dead spermatozoa there, and then we insert our syringe into the fundus and recover live spermatozoa, we may be reasonably sure that these live spermatozoa actually came from the fundus. Of course, the later after coitus such examinations are made, the harder it is to find spermatozoa, but if found, we are the more certain that they came from the fundus. If we do not find any live or dead spermatozoa in the fundus, we cannot draw any conclusions, as even in normal cases, we may not find them. The test, therefore, as far as the fundus is concerned, is only of value if spermatozoa are found.

But if a positive finding is obtained, we again receive valuable information. How many women have been operated on because an anteflexion was supposed to interfere mechanically with the ascent of the spermatozoa into the fundus and tubes. Likewise we know that the uterine endometrium is not inimical to the vitality of the spermatozoa. The cause of the sterility may now be narrowed down in a general way to be due to either a small undeveloped, infantile uterus, which has not sufficient vitality to support or nourish a developing fetus, or some trouble with the tubes or ovaries. The condition of the uterus can generally be made out by examination, including the use of the uterine sound. Up to quite recently we had to resort to operation to determine the patency of the tubes, but, owing to the splendid achievements of Dr. I. C. Rubin, of New York, we now can dispense with operative procedure and diagnose their patency with oxygen insufflation, and by x ray examination see whether the oxygen has reached the abdominal cavity. But a discussion of all this, though interesting, does not come within the scope of this paper.

In this connection we may also note that there are cases in which there seems to exist a dysharmony (if I may so call it) between the spermatozoa of the male and the ova of his wife. In these cases, although both parties are fertile, and each may produce offspring with different mates, they are sterile towards each other. Although some study has been attempted in this field, it has thus far not produced practical results.

Occasionally we find women who do not wish their husbands to know that they are investigating the cause of the sterility. With the Huhner test, this can easily be accomplished. Of course, if no spermatozoa are found, we then must request a condom specimen, and so let the husband into the secret.

As this paper is limited to a discussion about the examination for spermatozoa, I have not gone into much detail concerning the many diagnostic data that can be drawn therefrom, but have limited myself to only a few which brings out its advantages. Those who desire further detailed information may find the same in my previous publications (15, 16, 17, 18).

TECHNIC.

A few words may not be amiss as to certain points in the technic of the test.

Of course, the microscope, slides and cover glasses should be in readiness. The instruments should have been sterilized by boiling, but must not be placed in any antiseptic solution, as this might be inimical to the vitality of the spermatozoa. They may, however, be placed in sterile water, or simply upon a sterile towel. No lubrication is to be used in inserting the speculum. In case a gynecological examination is to be made at the same time, it should be made after the Huhner test is completed.

It is advisable to examine each specimen as soon as procured, and not to take all the specimens at one time and then examine them. In many cases the material obtained is quite sticky and dries up rapidly unless examined at once.

Some physicians instruct the patient to put a plug of cotton or tampon in the vagina after coitus, to prevent the seminal fluid from running out while the patient is en route. I do not advise this procedure, for, in the first place, it is unnecessary, and in the second place, it sometimes actually sucks out the fluid from the genitals into the cotton, doing actually what it is supposed to prevent.

I always employ cover glasses in examining the specimens. It is true that in some cases we can focus directly on the slide, but this is neither scientific nor accurate.

If the precaution is taken to allow the patient to extend her legs while the specimen is being examined, and to resume the gynecological position only for the time another specimen is procured, we will not hear of any complaints of the legs getting tired during the periods of making the test.

When we try to get specimens from beyond the cervix or the fundus, we must be very gentle in our manipulations, for in some cases the slightest roughness may produce bleeding or oozing, which may spoil all the specimens, and may even prevent us from taking any more specimens at that time. If it should be necessary to insert a tenaculum forceps in order to pull the cervix down, we should not fasten the forceps within the cervix or on the upper cervical lip (the woman being in the gynecological position) but we fasten it in the lower cervical lip, so that if any bleeding results from the tenaculum points, it will not run over the os and spoil or interfere with the specimens.

Besides these methods for obtaining semen for examination, there are two other methods which are sometimes employed.

It sometimes happens that candidates for marriage, especially those who have at some time or other had gonorrhea, and more especially those who have had epididymitis, come to us to find out if they are sterile. While a condom specimen would give us more accurate information, it is not justifiable to advise these young men to indulge in coitus in order to obtain a specimen of their semen.

In these cases I have the patient come to my office with a full bladder, and then submit him to a rather vigorous prostatic massage and stripping of the seminal vesicles and examine the expressed fluid as it appears at the meatus.

As a matter of refinement, I place a Zipser clamp on the penis, behind the corona, before starting the massage. By so doing I avoid, as happens in some cases, having the secretion flow out in large amount. It allows me also plenty of time to wash my hands after the manipulations, and so do not run the danger of soiling the slide with the lubricated fingers while taking the specimen. I do not open the clamp all at once, because at times so much fluid escapes and swamps the entire slide. After procuring as many specimens as necessary the patient may urinate. The amount of fluid obtained varies greatly in different individuals, and is no criterion of either the health or disease of the parts. It is always advisable to inquire as to the occurrence of the latest wet dream, as a recent wet dream may influence both the quantity and quality of fluid obtained. If necessary, another specimen should be taken as long as possible after a pollution.

In many cases the fluid under the microscope shows almost as many live spermatozoa as a condom specimen, while in other cases we may have to look for some time before seeing a live spermatozoon. Both conditions may be strictly normal.

In some cases no fluid at all appears at the meatus on removing the clamp. In such cases it is advisable to have the patient stand erect for a while, and generally some will appear. At times it may be necessary to squeeze forwards, starting from the perineum along the urethra, and thus coax the fluid forward. The nonappearance of fluid does not signify anything pathological, as the fluid may have regurgitated into the bladder. Every once in a while a second massage at the same time will be necessary to produce the fluid.

It must be understood that while the appearance of live spermatozoa in a specimen produced in this way shows that the testicles produce normal spermatozoa, their nonappearance in such a specimen does not mean that the patient is sterile. We simply can draw no conclusion and must reexamine at some future time. In a condom specimen, absence of live spermatozoa absolutely indicates a pathological condition, in a massage specimen such is not the case. It is perfectly possible that a person have numerous live spermatozoa in the condom, while his expressed fluid shows not a trace of any. While examining for spermatozoa, we of course notice the presence or absence of pus cells. Their presence, in any considerable amount, indicates a pathological condition, even though numerous live spermatozoa are present. Pus, however, does not necessarily interfere with the procreative faculties of our patient. It is mainly of value in causing us to hunt more carefullly for gonococci if there has been a history of gonorrhea.

We must have the patient understand, however, that the finding of live spermatozoa merely indicates that the testicles are working normally, that there is no obstruction to their exit, and that the secretions of the various male generative glands are not inimical to the vitality of the spermatozoa. I always tell the patient that if such spermatozoa come in contact with the normal ova of the female, she will probably conceive, but there is nothing about the nature of the specimen itself to indicate that the spermatozoa will survive in the secretions of the female genitals, or that they will even reach the cervical os at coitus. However, as a general rule, if coitus is normal, and no pus cells are found in the specimen, we may consider the possibility of impregnation by such semen in a candidate for marriage as good. In a married man, however, we should insist on the Huhner test for further information.

There is another method of obtaining semen for examination which I mention merely to condemn. There are some physicians who advise the patient while in the doctor's office to masturbate in order to procure a specimen. I have never made use of this method, and consider it unjustifiable.

Finally in cases of azoospermia, we may obtain specimens directly from the testicles by aspiration. This procedure I have recommended in those cases of sterility in which there has been a history of gonorrheal epididymitis and in which repeated and careful examinations of condom specimens have shown absolute azoospermia. The only hope of affording some chance of relief from the sterility in these conditions (and the chances at best are not brilliant) is to perform either an epididymovasostomy or the sac operation. Before suggesting either of these procedures, I think it is wise to find out if the testicles themselves produce spermatozoa, as in many of these cases the gonorrheal inflammation has not only caused an occlusion of the vasa, but has also destroyed the function of the testicles themselves as regards the formation of spermatozoa. Any operation, therefore, having for its object merely the relief of the obstruction would be absolutely useless in this latter condition.

The technic of the procedure is very simple. We sterilize the skin with iodine and employ a hypodermic syringe with a rather large calibre needle. The needle is plunged through the body of the testicle and suction maintained while it is being withdrawn. When the needle is out, we do not first expel the air, but insert the point directly upon the slide and expel its contents. The reason for this is that very often all the spermatozoa seem to accumulate directly at the point of the needle, and if we expel the air and the first drop, we may have thrown away all the spermatozoa in the needle. Even in normal cases, we sometimes have to search for a long while before any spermatozoa are found, but generally, if one is found, more will be found in that particularly vicinity. In some cases we do not obtain any fluid for examination at all.

It should be emphasized that in specimens procured in this way, the number of spermatozoa found is very small indeed. While we like to find moving spermatozoa, we must not conclude that motionless spermatozoa are pathological. It may simply mean that the particular spermatozoon has not yet started to move. In some cases the amount of fluid is too small to allow of much motion on the part of the spermatozoa.

The procedure itself should not be undertaken, unless a special indication for it exists. In some cases the pain is quite severe. The use of cocaine in the skin has no value whatsoever, as the pain is distinctly testicular in character, and in some cases extends up the cord, and may be more severe in the neighborhood of the internal ring than at the site of the puncture. The pain sometimes lasts an entire day, and in one neurasthenic patient of mine it lasted an entire week. I have seen one or two cases of mild shock, also vomiting and faintness, follow the procedure. I have, however, never seen any bad results from the aspiration. Some patients do not mind it at all. I have tried several times in cases of sterility due to azoospermia, and where I have recovered live spermatozoa from the testicles, to inject these live spermatozoa directly into the cervical os of the wife, but have never been successful in relieving the sterility. On consulting the literature I found that the procedure has never been successful in human beings, though it has been successful in animals. A full account of my experiments in this connection can be found in my book on sterility (15).

The author's bibliography will appear in the reprint of this article.

Some Considerations of the Diseases of the Genitourinary Tract

By WILLIAM J. EZICKSON, A. B., M. D.,
Philadelphia,
Assistant in Urology, Post Graduate School of Medicine, University of Pennsylvania.

As a general rule diseases of the genitourinary tract are treated lightly by the patient and routinely by the family physician, with the result that the urologist usually sees the patient after the disease has taken on a chronic form, or in bladder and kidney affections the disease has gone on to an incurable state. Nothing has impressed this more forcibly than the mobilization of our Army in the great war. The number of men rendered unfit, totally or partially, on account of diseases of the genitourinary tract, venereal or nonvenereal, was appalling. The aim of this paper, therefore, is to consider, in a practical way only, diagnosis and treatment of diseases of the genitourinary tract. I hope that more careful examinations will be made of these patients by the physician, and the patient's statement that he has the gonorrhea or chancre or what not, will not be taken for granted, but that careful scientific examinations and treatment will be carried out within practical limits.

GONORRHEA.

The prophylactic treatment of gonorrhea consists in the use of injections of protargol, one half to one per cent., or the irrigation of the anterior urethra with potassium permanganate, one to six thousand or one to eight thousand. Too much stress cannot be laid on the point of making a smear for microscopic examination of every case that presents itself with a urethral discharge. Many cases of nonspecific urethritis, tuberculosis and intraurethral chancre go undiagnosed until it is possibly too late for early treatment, because the patients have been treated for a gonorrhea based on the appearance of a urethral discharge.

TREATMENT OF ACUTE GONORRHEA.

Relative to the abortive treatment of acute gonorrhea, it is well to state that, in my opinion, it is a dangerous procedure, and does more damage than good by causing complications. The earlier the disease is treated the better the results. Whenever possible, the patient should be ordered to bed, but if this is not feasible, standing or walking should be reduced to a minimum. This may shorten the attack and prevent complications. While the acute symptoms are in progress, it is well to desist from any local treatment. Treatment at this stage should consist chiefly in giving the patient plenty of liquids internally, purgatives; immersing the genitalia in hot saline solution; the wearing of a suspensory, and, if symptoms such as ardor urinæ are present, sedatives should be given by mouth. Ten minims of the oil of sandalwood may be given internally. After the acute symptoms have subsided, injections should be given of one half to one per cent. protargol or ten per cent. argyrol. This can be supplemented or substituted by irrigations of potassium permanganate, one to eight thousand or one to four thousand, and gradually increase the strength as time goes on. After the first few weeks the irrigations may be made complete instead of confining to washing out the anterior urethra. If the discharge ceases prostatic massage can be done at the end of five or six weeks and a smear made for microscopic examination of the products obtained by massage. Prostatic massage is accomplished every four or five days until the pus cells disappear, or until the number of cells average five to six to the field. Prostatic massage should also be followed by complete irrigation. After the discharge has entirely ceased, and if the prostatic smears are negative, it is well to pass a sound or two, possibly 24 to 26 F. The patient should be advised regarding the general hygiene, diet, and especially the fact impressed upon him or her that the disease is one that should not be treated lightly, and that directions should be followed to the letter where possible. The absence of a discharge does not mean a cure.

ACUTE PROSTATITIS

Is usually manifested by frequent and painful urination, and the second test glass is very cloudy and full of pus and shreds. If it is severe and the patient is suffering from a great deal of tenesmus, he should be ordered to bed and sedatives given internally; all the injections and irrigations should be stopped until all the acute symptoms subside. When the condition becomes subacute, irrigations can be resumed. This condition tends to cause chronic posterior urethritis and stricture. A word in reference to the two glass test, on which many decide whether they are dealing with an anterior or posterior urethritis. Dependency in this test is often misleading, since in about seventy-five per cent. of the cases infection travels to the posterior urethra, and yet the second glass in many cases may be absolutely clear.

NONSPECIFIC URETHRITIS.

This is often of short duration, and is best treated by anterior irrigations with oxycyanide of mercury, one to eight thousand, or potassium permanganate, one to eight thousand or one to six thousand.

COMPLICATIONS OF GONORRHEA.

The usual complications are prostatitis, seminal vesiculitis, deferentitis, epididymitis, and prostatic abscess; less frequently arthritis and endocarditis, and, rarely, involvement of the bladder and kidney.

Prostatitis and seminal vesiculitis.—These complications are best treated by massage of the prostate and seminal vesicles, followed by complete irrigation with potassium permanganate, silver nitrate, or mercurochrome 220, the passage of sounds, and the use of the Kohlman dilator.

Epididymitis.—This complication is usually an acute one, and best treated by elevation of the scrotum and the application of heat and cold. Ointments can be used containing belladonna, mercury, or guaiacol.

Stricture.—These may be of three types: inflammatory, traumatic, and congenital. Much harm is often caused by attempting to pass metal sounds in cases of stricture. It is best to first pass shot bougies, if possible, and if these are easily passed metal sounds may then be attempted, gradually increasing the size and not using too forcible methods. Too much care and gentleness cannot be taken in the treatment of strictures, whether anterior to the bulb or at the bulbomembranous junction.

CHANCROIDS.

The clinical differences between chancroids and chancre are well outlined in textbooks, but from a practical viewpoint this is a poor method to use in differentiation. Great care should be taken in the differential diagnosis between these two conditions, since in a great many cases mixed infection occurs. A dark field examination should be made from every sore occurring on the genitalia, whether it has the appearance of a chancre or not. If first examination is negative, at least two more dark field examinations should be made. The blood should be taken in every case for a Wassermann test. After making certain that the case is one of chancroids, the best form of treatment is as follows: Anesthetize the sore with a ten per cent. solution of cocaine, then apply a twenty-five per cent. solution of copper sulphate and apply the high frequency spark. This method of treatment has been found to be one of the best, in that it converts a suppurating septic ulcer into a nonseptic one. If phimosis is present to an extreme and the sore is hidden, it is then well to incise and lay the lesion bare, following this by the high frequency spark. If a suppurating bubo is present, incision should be made and the use of Carrel-Dakin solution will cause a speedy healing of the wound.

CHANCRE.

No diagnosis of chancre should be made without a dark field examination. A negative dark field does not disprove a chancre; but a positive one means immediate injection of salvarsan or neosalvarsan. No local measures, such as dusting powders, ointments or caustics, should be used. These only tend to prevent a proper diagnosis, and may cost the patient dearly in the future. The proper and efficient treatment of syphilis means the proper diagnosis and treatment of the chancre. Blood for Wassermann test should be taken in every case once a week for six consecutive weeks.

DISEASES OF THE TESTICLE.

Syphilis is diagnosed by the blood reaction and clinical history, and treated by usual antisyphilitic measure.

Tumors, such as sarcoma, call for early surgical intervention.

Tuberculosis is a comparatively infrequent disease attacking the testicle without other parts being involved. Surgical measures are usually called for.

Abscess is usually due to colon bacillus, and occurs chiefly in old men suffering from prostatic obstruction.

Mumps should not be forgotten as a cause of orchitis, and local palliative measures should be used. It frequently results in atrophy of testicle.

Trauma is a great factor in orchitis, and is treated by local applications of heat or cold and elevation of parts. Various complications may follow a trauma.

DISEASES OF THE BLADDER.

Far too many patients presenting bladder symptoms of one type or other have their condition diagnosed as cystitis. Every patient presenting symptoms referable to the bladder whose symptoms do not clear up under the usual treatment for cystitis in a comparatively short time, should be cystoscoped by a competent cystoscopist. Bladder symptoms are usually secondary to an underlying cause which should, if possible, be ferreted out. The plea for early cystoscopy cannot be made too strong.

OBSTRUCTION AT BLADDER NECK.

Obstruction at the neck of the bladder may be due to one or more of several causes. Enlarged prostate is by far the most common. Rectal examination alone does not suffice in making diagnosis of prostatic condition. Every patient should be cystoscoped. Other causes may be nerve lesions (tabes), tumor, and calculus.

TUBERCULOSIS.

The principal sites of affection are the kidney and epididymis, and usually depend on a focus in other parts of the body. It is rarely primary in prostate and vesicles. Every scientific means should be used to conclude the diagnosis of tuberculosis, and immediate steps taken against the area of infection. The method of treatment of tuberculosis of the genitourinary tract depends on the site and extent of the infection. A happy result can only be expected if the diagnosis is made early and proper treatment instituted.

1624 SPRUCE STREET.

An Important Classification of Albuminurias

By EDGAR G. BALLENGER, M. D., F. A. C. S.,
and
OMAR F. ELDER, M. D.,
Atlanta, Ga.

In dealing with patients with albuminuria, a test which has been of value to us during the past ten years in determining the cause and in its treatment has been to administer alkalies, preferably sodium citrate in one dram doses three times a day, to find if the albumin disappears when the urine is rendered alkaline, which it does in a surprisingly large percentage of cases. This test naturally gives us three main groups of albuminurias:

First, those which have no albumin and casts when the urine is kept alkaline in reaction.

Second, those in whom there is a reduction in the amount of albumin and casts.

Third, those where there is no appreciable change in the amount of albumin and casts following the administration of alkalies.

In the course of routine urologic work, the largest number of patients come in the first classification and the smallest in the third. We are speaking only of the patients whose urine is free from pus and blood. For practical purposes, this classification offers many advantages both in the diagnosis and in the treatment, as it enables one quickly to ascertain the probable cause of the albuminuria and to institute appropriate treatment without unnecessary delay in those due to hyperacidity and the associated phenomena.

Obviously, it is necessary to administer sufficient alkali to make the urine neutral or alkaline in reaction. This at times cannot be obtained without increasing the amount of sodium citrate to more than three drams a day, which is the usual dose to start with. It is generally given in lemonade between meals. There is an advantage in administering also juices of fruit, such as oranges, lemons, and grapefruit. The fruit acid is eliminated as an alkaline carbonate. The bowels are kept reasonably active and the patient is permitted to eat nearly anything that agrees with him, but he is advised to eat meat in only a moderate amount. The urine is tested by the patient every other day to determine if an increase in the alkali is indicated. In all instances where there is no edema the patient is urged to drink freely of water to dilute the toxic products eliminated in the urine and thus lessen the toxic results.

If under this treatment the albumin persists for more than one or two weeks, we conclude that the condition does not belong in the classification first mentioned. If there is a definite decrease, however, in the amount of albumin and casts, but some still persist, we continue the treatment without other measures for a week or two more, restricting the diet, however, in both the variety and the amount of food taken; more rest is advised and greater care with the bowels.

Finally in about three or four weeks, if the albumin and casts persists, we conclude that the type belongs in group two and, regardless of subsequent treatment, we think alkali should be continued along with the other measures employed for the manifest reason that some improvement followed its administration. Where the above plan is followed by no decrease in the albumin and casts, we conclude that no benefit can be obtained from the alkalies.

The advantage of the plan above outlined is that the patient does not have to submit to tonsillectomy, x ray examinations, extraction of teeth and elaborate investigations to be relieved of the conditions which come in group one.

Those in group two are found as stated to need alkalies with the additional measures.

Those in group three are those which tax our diagnostic ability, sometimes excessively, to find focal infections, to correct the diet and gastrointestinal disturbances, to detect disturbances in the gland functions, to recognize luetic nephritis, etc.

It would take us beyond the scope of this short paper to discuss the etiology of nephritis or to elaborate upon the other useful and necessary classifications and measures employed. The object we have in mind is merely to direct attention to this plan of classifying patients who have albuminaria.

We feel confident that the men who have not used this classification will be agreeably surprised by its assistance.

Vas Puncture, Injection of Vas with Argyrol and Seminal Vesiculotomy*

By A. S. SANDERS, M. D.,
New York,

Chief Genitourinary Clinic, Mt. Sinai Hospital; Assistant Visiting Genitourinary Surgeon, City Hospital.

Since Dr. Eugene Fuller, of New York, acquainted the profession with the importance of the pathology and treatment of seminal vesicles, this important focus of infection has attracted a good deal of attention. He later devised and elaborated seminal vesiculotomy as a means of surgically draining the seminal vesicles.

In cases of rheumatic arthritis, whether gonorrheal or not, there is a possibility of involvement of throat, tonsils, teeth, and other parts of the body, but not enough attention is paid to seminal vesicles as a possible focus. In ordinary cases the patients respond to the customary massage and stripping of seminal vesicles, with the expected cloudy appearance of the urine and the appearance of many pus cells after such stripping. In obstinate cases, especially of the sclerotic type of seminal vesicles where hard stripping does not result in emptying the contents, and when no visible or microscopic pus is found, an occlusion of ducts may occur, and persistent massage forces material into the vas and may cause epididymitis. Belfield remarks that in his experience with vas puncture he estimates that occlusion of the vas occurs in one per cent. of the cases. In my series I found about the same proportion of cases of occlusion, especially in cases with unilateral epididymitis.

Vas puncture is best done after the plan of Belfield. I have used a twenty per cent. solution of argyrol instead of collargol, as advised by Belfield.

SEMINAL VESICULOTOMY.

CASE I.—M. H., aged twenty-one. First attack of gonorrhea three years ago. There was no epididymitis. Three weeks after the beginning of this infection the patient felt pains and swelling in his left knee and left wrist. He spent nine months in various hospitals and six months in bed. He had received baking, electricity, vaccines for months, with no improvement in the arthritic condition. After this he visited several hospitals, with no change in his condition. Three months ago he had a relapse of his gonorrhea. On August 15th an injection of the vas was done under novocaine anesthesia. The vas was found open, and injected with twenty per cent. argyrol. There was no reaction and no pain. The urine was black and a drop of argyrol was still visible seven days after the operation. Three weeks later he experienced a seminal loss at night and noticed the discharge to be black. On September 20th, the urine was clear and there was no discharge; no change in arthritic condition. There was marked seminal vesiculitis with cloudy urine after massage by rectum. I advised a seminal vesiculotomy, which the patient refused, and I did an injection of the vas instead.

CASE II.—A. B., aged thirty. Gonorrhea six months ago; gonorrheal rheumatism three months ago in ankles and knees. The patient received vaccines, baking, electricity, with no improvement. June 10, 1920, seminal vesiculotomy by Dr. Fuller's method was performed. In two weeks the patient was out of bed and walking around. He had slight infection in the lower angle of the wound below the rectum, which was cleansed and packed, and was somewhat slow in healing. On August 5th the wound was healed by granulation. The arthritic symptoms disappeared entirely, and the patient did some work in the ward. The urine was still cloudy and the discharge reappeared. On August 14th the vas was exposed, punctured, and found blocked. By September 15th the arthritic symptoms did not return, and the urine was clearing after local injection with argyrol. This patient returned for observation April 11, 1921. The urine was clear after massage of the seminal vesicles.

From my experience I observed a decided improvement of the arthritic condition following seminal vesiculotomy and a rapid disappearance of the chronic discharge and clearing of urine after injection of vas with argyrol. Therefore, I advise a seminal vesiculotomy in these bad gonorrheal arthritic conditions and a vas puncture and injection in chronic relapsing discharges when the arthritic condition is of a mild character.

I take this occasion to thank Dr. Rabinovitz, of the City Hospital, in selecting these cases.

---

*From Urological Service, City Hospital, New York.

Editorial Articles

THE PASSING OF A PESTILENCE

Yellow fever, "the jaundiced handmaiden of death," will soon cease to rank as one of the major pestilences, in fact, there is a reasonable hope that within a decade the disease which formerly was the annual summer threat of the Gulf and Atlantic free-board will become a pathological curiosity. This signal advance of civilization results primarily from the epoch making labors of Reed and his confrères but there are several secondary factors which have contributed materially to this end.

The development and continuance of yellow fever requires the presence of the virus, the specific insect vector and a sufficient supply of nonimmune human beings. The absence of any of these basic essentials breaks the disease cycle and it ceases until all of these conditions are again satisfied. The World War prevented to a large extent the migration of nonimmune persons into the endemic centres of yellow fever thus breaking the chain of infection continuity and when commercial intercourse was reestablished on its prewar basis many ports which were previously notoriously infected with yellow fever showed a complete or relatively complete subsidence of the disease.

The abolition of yellow fever from the great distribution ports of Habana, Rio de Janeiro and Panama by the practical application of antistegomyia (Aedes calopus) measures has prevented to a great extent the shipment of persons into infectable territory, i. e., has controlled the migration of the infecting organism. The eradicative campaigns which have recently been conducted with such signal success in Ecuador and Peru and which are now being prosecuted so vigorously in Mexico are in furtherance of this idea as well as the health protection of the inhabitants of the locale.

The perigrinations of the incriminated mosquito have been largely checked by the substitution of steam for sailing vessels. This is not at all in harmony with the sanitary prophecy made a few years ago which predicted that the increased use of steamships and the opening of the Panama Canal would result in the spread of yellow fever into hitherto uninfected territory. The slow, unventilated sailing ship bred its own aedes in the fresh water storage tanks but that rather delicate mosquito does not long survive in the well ventilated, cooler steamer which by the distillation of its fresh water provides no breeding places. This more than offsets the fact that the swifter vessel is more likely to transport patients in a state infectable to mosquitoes than in the slower craft.

The Panama Canal by reason of the abolition of its yellow fever focus—a focus which in the past constantly reinfected Central America and the northern and western coast of South America—and the notable example which it thereby placed before the world, has played an enormous rôle in the general eradication of yellow fever in the past. Its work in the present is no less important. Its quarantine stations act directly as a constant check on the spread of the disease and indirectly as a stimulant to intensive eradicative measures in the Central and South American republics. Its marvelous internal sanitation stands as a monument to an achievement of medical science which has translated the pest hole of the New World into the healthiest spot now occupied by man.

Noguchi by the discovery of the Leptospira icteroides and the development of a prophylactic vaccine and a curative serum has supplied the last weapon against yellow fever. Thus the greatest single obstacle to the occupation and civilization of the New World is rapidly passing into history—a history beginning with the first voyage of Columbus—a history whose grisly pages are illuminated by the self-sacrificing courage and altruistic intelligence of the medical profession of the Western hemisphere.

HYSTERICAL CHEMISTRY

"Nothing in Nature is dead." That is what Liebnitz said, and the hylozoists quote him, their name implying an adherency to his teaching. Putting aside their wild and fanciful ideas, at least those which seem so today, listen for a moment to Jollivet-Castelot, who wrote, *Lá Vie et L'Ame de la Matière, Essai de Physiologie Chimique,* Paris, 1894, a Monist whom Professor H. C. Boulton condemns under Hysterical Chemistry, (*Chemical News,* Jan. 7, 1898). That which is commonly called inert or dead matter (metals, minerals, elementary bodies), even the physical atoms, is not dead, but is possessed of life, analogous to plants and animals, but less active and conspicuous. Thus the three Kingdoms of nature, animal, vegetable and mineral are brought within the influence of evolution.

Jollivet-Castelot writes also of the individualities of minerals, of their souls, but says these are inferior to those of plants and animals. "Admitting a human spiritism, there must exist a vegetable and mineral one, for we know that the entire universe is animated by an evolutive intelligence organizing matter and condensing energy. I will not go so far as to affirm that electricity is the soul, but, I venture to say, that electricity excites the spiritualistic phenomena, accompanies them, and perhaps serves as an intermediary between conscience and organized matter."

It is interesting to recall the work of Sir Jagadis Chunder Bose regarding *The Response in the Living and Nonliving,* 1910, wherein he determines whether, throughout the whole range of responsive phenomena, a parallelism between animal and vegetable could be detected. He shows that response phenomena are exhibited not only by animals and plants, but by inorganic substances as well, and the two last are modified as in the first. The fatigue of metals is familiar; they can also be poisoned or excited Curiously, the effects of a poison when given in large or small doses to animals, is seen to hold good for plants and minerals; that is, it is stimulative when given in small doses, deadly in large ones.

Sir Burdon Sanderson, a physiologist, first complimented, then advised Bose to return to his work as physicist. As to the electric response of ordinary plants, he would say that it was absolutely impossible. It really could not be. Lord Rayleigh had had the same scepticism shown about argon by the chemists. Now the latter are silent. He tried to comfort Bose, but the failure in belief was a great shock to him though he was triumphant in the end.

The leading Monists, in 1864, were Louis C. E. Vial, F. C. Barlet and F. Jollivet-Castelot, their guide a Swede, named August Strindberg. All cordially endorsed by Paul Sédir, Georges Encausse, and other occultists. Their motto is, "Matter is one, everything comes from one, one is all." Their doctrine is of great antiquity. It served as a foundation for ancient oriental religions. The philosophers and priests of India, Chaldea and Egypt used it and all maintained that the universe is living and evolved.

UNCLASSIFIED FEVERS

We do not know what a highly trained librarian is, but one of the species was installed in a private library and put everything she did not know the name of under miscellaneous. The result was a cheerful tidiness to the outsider. From the owner it produced most untidy language, and a rapid eviction of the trained one.

Glancing at the *Tropical Diseases Bulletin,* Unclassified Fevers seem to be multiplying and swelling the list under this head. There was an epidemic fever on a ship near the valley of the Yang Tse. A climatic fever of unknown origin in Cochin China, very much like the seven day, five day pseudodengue. The writer suggests the name asthenomyalgic fever, which introduces the three chief characteristics.

Then there is a low fever, common in the tropics, but possessing no name. The slightly raised mean temperature and the heightened sugar metabolism, found in so many in the tropics, who may have a daily maximal temperature of 100° without feeling ill, may develop into low fever if the man's attention be drawn to the fact; otherwise, he keeps well.

A typhuslike fever in Birjand, East Persia, is unnamed and unliked. It is not slight, the mortality is twenty per cent., the average incapacity for duty about two months. It has a primary and a secondary wave.

Still more severe is the hitherto undescribed denguelike fever in Surinam, Dutch Guiana. It is often diagnosed as influenza, measles, typhoid, catarrh, fourth disease, and resembles a little the six day fever of the Panama Zone, and the seven day fever of Rogers. It lasts generally about nine days. The adult native population is relatively immune.

One doctor examined twenty cases of a fever in South Manchuria and North Korea, which closely resembled typhus, but was not. The organism obtained he called Bacillus pseudo typhus exanthematicus, though the organism itself did not say so. He had to call it something.

There were also in the Aden district, about six miles from the Canal, several cases of fever resembling the Mediterranean dengue, but the author found a great variation in the proportion of polymorphonuclear cells, from fifty-three to eighty-eight.

Still yet one. There are men chasing around to find if septic conditions of the teeth and gums cannot bring irregular pyrexial attacks. This should not seem so difficult to determine as the nature of the other fevers. However, the tropical diseases bureau and all the explorers are trying to classify them. One of the chief guides now is, what will cure them? The old remedies, or has a new one to be found?

THE PROBLEM OF INSUFFICIENT PROPAGATION AMONG INTELLECTUALS.

Even before the urgent demands of the recent war demonstrated the value of man power, interest in the problem of racial survival and expansion had been growing steadily. Military needs forced nations to realize that their security and their power depended mainly on the quantity and individual quality of their inhabitants. For the first time accurate statistics of the degree of fitness of whole populations were compiled, and the revelation came with a rude shock that perfect health was not as common a possession as had been generally imagined. Further, it is in the nature of wars that the heaviest losses occur among the ranks of the most precious section of a nation: its healthy young men. No wonder, then, the fact was brought home even to the least imaginative that nations must secure healthy citizens or perish. Thus attention was focussed on the huge preventable wastage of infant life. Soon it was realized that the problems of quality of offspring are inseparably connected with those of quantity; further, that infant mortality is lowest among that section of the population which has the lowest birth rate. However, as this section is capable, from an economic point of view, to supply and rear adequately larger numbers of healthy children, the question naturally arises, if the proportion of birth rate to mortality rate represents the eugenic optimum in this instance. The problem is more complex in the case of the intellectual section of the population. Here again offspring appears desirable from the racial point of view in order to perpetuate those qualities which have led to intellectual prominence in the case of the parents.

In this connection, a paper by Dr. K. Munn (Facts Bearing on the Problem of Insufficient Propagation Among Intellectuals, and Its Causes, *Archiv für Rassen-und Gesellschafts-Biologie,* 1920, No 2/4) presents some unusually interesting material for study. He reports a number of important facts bearing on the low birth rate among intellectuals, and gives an analysis of the causes leading to this insufficiency. The special value of this contribution depends on the fact that it represents the results of observations extending over a period of fifty years. The author collected his evidence among a circle of personal friends with whom he established contact, while still at college and university. The majority of the twenty-six men under review have given proof of more than average intellectual abilities; many of them have become famous.

Four men remained single. In the case of a famous scholar the cause was of an economic nature. He became the father of an illegitimate child, which he ultimately adopted. A lawyer did not marry, in order to remain unhampered in the pursuit of his ambitions, while a successful physician thought it his duty to remain single, because he had contracted syphilis at the age of twenty-two. The last celibate is a university professor, who is described as rich, but a crank.

Four marriages were sterile. In two instances the husbands suffered from venereal diseases. An author of repute had acquired syphilis and gonorrhea with bilateral orchitis before his twentieth birthday. In spite of his desire for children his marriage with a healthy woman remained sterile. In the case of a clever engineer, unsatisfactory treatment of syphilis, which he had acquired at the age of twenty-five, was responsible for repeated activity of the disease. The other two are lawyers, who married after thirty. One of them had decided to have no offspring, as his personal comfort was his only consideration; the other married a rather frail woman, and, though children were desired, the marriage remained sterile.

Voluntary restriction of the number of conceptions, though probably a universal practice, is a pronounced feature in twelve marriages. Only the lawyer referred to went to the extreme of avoiding the obligations of parenthood completely. Four couples had two children each, six had three children, and one couple had four children. The first case is that of a lawyer, university professor and statesman, who married a rich, healthy woman. After two healthy children had been born, further conceptions were prevented. Another lawyer, who had had gonorrhea in his youth, married a healthy, rich woman at the age of thirty-five. The parents thought it too troublesome to rear more than two children. A physician in a good official position had suffered from gonorrhea and chancroid, but had been cured. His first wife died childless. His second marriage resulted in two children, followed after an interval of five years by twins, in consequence of carelessness; the twins did not survive long. A well to do author married at the age of twenty-five. It was thought that more than two children would interfere with the artistic pursuits of the parents.

The group of couples with three children commences with two physicians. The first one married before the age of thirty. His first child suffered from continual ill health. For this reason, and also on account of economic difficulties, conception was avoided for eight years. After this interval two healthy children were born. The wife died a short time after the third confinement. The second physician, described as famous and a university professor, married a rich, healthy woman at the age of twenty-nine. In the course of six years they had three children. For social reasons no further children were desired.

The next case possesses some special interest, for it furnishes an instance of a serious error in obstetrical judgment. A university professor married at the age of thirty-eight. In four years two children were born, but further conception was avoided on account of the wife's extreme hysteria. However, after an interval of five years, an accidental pregnancy occurred. A celebrated obstetrician advised that the pregnancy should be terminated, "as one could not expect a healthy child, anyhow." The parents did not give their consent to the operation, and, thus, in due course a healthy, thriving child was born. A politician of world fame married when twenty-seven years old. Two children were born, followed later by a third accidental pregnancy. Further conceptions were avoided for the sake of political ambitions and economy. An extremely rich manufacturer, who is married very happily, limited the number of his children to three, because this happens to be the number fixed by family tradition. In the next two cases indifferent health of the wife and social obligations are given as reasons necessitating limitation. A university professor, married at thirty-six, had three children at long intervals. The other case belongs to the group of four couples, each of whom had four children. An eminent scientist of world fame married at the age of thirty-six. One of his four children died.

In five instances diseases had an adverse effect on the birth rate. A mechanic, who later became an actor, had one child. After the death of his wife he became a drunkard and deteriorated completely. A lawyer and author divorced his wife eight years after marriage. Two children had been born. Two years later he married a childless widow, aged thirty-five. After the difficult birth of her first child a noted obstetrician forbade further pregnancies, to the great grief of both parents. Many years later a gynecologist declared this decision to have been quite unjustified. In the following cases old gonorrheal infections led to disastrous results. At the age of thirty-two a painter married a healthy girl who was twenty. He had contracted gonorrhea some years previously, but thought the disease had been cured. However, his wife was infected and became completely sterile after the first puerperium. A successful lawyer, thirty years old, concluded a love match with a girl aged twenty-three. She became infected by an old gonorrhea which had lingered unnoticed. After the first labor, complete removal of the internal organs of generation became necessary. A famous scientist contracted gonorrhea in his student days. As a result, a stricture developed and he suffered from general bad health. At the age of thirty he married a wealthy girl. After the second child marital relations ceased, owing to incompatibility.

The last two cases belong to the group of marriages which produced four children. A rich physician and university professor had four children in nine years. The fourth child represented a voluntary excess of the maximum of three children, which had been an old family tradition. Finally, a lawyer of means married at the age of twenty-six. In twelve years there were four children. He died at the age of thirty-eight.

In reviewing the life histories outlined, it will be seen that four of the twenty-six men remained single, twenty married once, and two married twice. In all, these men produced forty-eight legitimate, live children and one illegitimate child. Twenty-four of these were boys and twenty-four plus one were girls. This gives an average of two children for each of the twenty-four couples. Four of the marriages remained childless; one resulted in a still birth; four produced one child each; five produced two children each; six had three children, and four produced four children.

It is to be noted that of the forty-eight legitimate children only three died during infancy, and forty-four are alive now. But, even with this very low infantile mortality, their number does not suffice to merely replace the twenty-six men and twenty-four women.

The author thinks that the figures for the incidence of venereal diseases are accurate. Three of the twenty-six men were infected with syphilis. Two of them died early in consequence of the disease; none of them had children. It is usually computed that gonorrhea is three to four times as frequent as syphilis. However, in the series now under review, there occurred only six cases of gonorrhea and two of chancroids. In two instances the wives were infected with gonorrhea and became sterile after their first labors. One marriage remained sterile, presumably on account of the husband's previous double orchitis. It must be emphasized that all eleven infections of these eight men occurred between their eighteenth and twenty-fifth years. In almost all cases the infection took place soon after they became students in a large university town.

The majority of the marriages were concluded when the husband had reached the later twenties, but in eight cases (i. e., in over a third of the total) the husband was over thirty. Four of these eight men had reached the age of thirty-five or more.

Before an attempt can be made to draw any conclusions from the facts presented, it must be emphasized that no essential differences exist between the various civilized countries, nor yet between different strata of society, with regard to all material points of the problems. Neither intellectuals nor other members of the community seriously consider the effect of insufficient propagation on the life and virility of the race. Just like the individuals under review, mankind in general regards marriage and the production of offspring as a purely private and personal matter. On the other hand, the clear realization by the individual parents of their duties resulted in a reduction of infantile mortality, and in a high standard of health and education of the children.

No elaboration of the facts can intensify the description of the havoc wrought on men, women and children by gonorrhea and syphilis. The incidence of syphilis was one in nine; of gonorrhea, one in four. It may be reasonably suspected that the rate was higher for the latter disease, on the strength of general observations and by comparison with the rate of incidence of syphilis. It might be suggested that conditions are worse on the continent than in the United States or Great Britain as far as venereal diseases are concerned. It must be insisted upon, however, that any differences that may exist are insignificant in view of the gravity of the problem. Further, it may be pointed out that, in a recent debate of the London Parliament, the number of known cases of venereal diseases in Great Britain was said to be 800,000; it was also stated that this number was constantly increasing. Forty-seven of our states have passed legislation making venereal diseases notifiable. The reports (*Annual Report of the Surgeon General of the Public Health Service of the United States,* Washington, 1920) collected from the various State Boards of Health in 1920 show an increase of thirty-six per cent. over the number of cases in 1919. The actual percentage of cases reported in 1920 was 0.305 per cent. of the estimated population. However, as pointed out in the report, it is not yet possible to determine the true incidence of venereal diseases, as only an unknown fraction of all cases actually occurring has been reported so far. Yet, even under these circumstances, the number of cases of venereal diseases reported in 1920 reached a total of 326,117.

In conclusion, it may be stated that the need for reforms is urgent, if the supremacy of our civilization and our leading races is to be maintained. The chief problems appear to be of an economic nature, as demonstrated by the rising age at which marriages are concluded, and by the growing difficulties of rearing children adequately. Another problem is presented by the prevalence of venereal diseases. Their suppression requires rational legislation and education, in addition to facilitating earlier marriage and the adequate provision of prophylaxis and treatment.

PREPARATIONS FOR DRUG ADDICTION.

Since the publication in the New York Medical Journal of January 29, 1921, of a paper entitled Treatment of Addiction Disease, certain facts have come to our attention which should be made known to our readers.

The paper mentioned was signed by Frank Burns, M. D., who styled himself "Federal physician for the southern district of Ohio," and this fact led us to accept it for publication with less careful scrutiny than we ordinarily give to manuscripts. Inquiry of the Surgeon General of the United States Public Health Service has revealed that there is no Dr. Frank Burns in the employ of that service. It is further doubtful if any such official position exists under the Federal laws.

The paper itself appears to be a cleverly concealed advertisement of a substance made by a well known drug firm, which is offered to the profession as a specific remedy for drug addiction. It is a secret preparation. The drug firm, in seeking to introduce it through one of its representatives, a Dr. J. J. Wood, of Cincinnati, has submitted samples for tests to various health officers and others, refusing to disclose its formula, although requested to do so. Reference is made in Dr. Burns's paper to the researches of Horovitz, Bishop and others (not named), to prove that drug addiction is a definite "disease." Such a theory would seem to lend support to the claims made for a specific remedy, and the presentation of such a remedy to presuppose the existence of such a malady. However, the Horovitz referred to does not appear to be a registered physician, but is in the employ of the drug firm mentioned as director of their biochemical laboratory. Also, it is the same Horovitz who may be recalled by some of our readers as the sponsor for an alleged cancer cure called autolysin. The Bishop mentioned is, presumably, the Dr. Ernest S. Bishop who has obtained considerable publicity through his contention that addiction is a disease, and by reason of his indictment by a Federal Grand Jury for violation of the Harrison narcotic law.

◆

News Items.

American Journal of Surgery.—A very attractive fracture number of the *American Journal of Surgery* will be issued in May. Original papers by recognized authorities upon the subject of Fractures will be published in this number.

$1,000 Lures Patients.—There are a great many Chicagoans who are willing to risk their lives in scientific experiments to benefit humanity, it was disclosed recently at the John McCormick Institute of Infectious Diseases. Three pathologists of the Institute hope to isolate the scarlet fever germ in order that a preventive serum for that disease may be developed. Fourteen persons presented themselves at the hospital and asked that they be accepted as subjects for the test.

A Great Surgeon.—Dr. Robert Abbe, of New York celebrated his seventieth birthday on April 13, 1921. He has been surgeon to St. Luke's Hospital for more than a generation, and to the New York Cancer Hospital for nearly a generation. He was a coworker with Mme. Curie in Paris, and the pioneer in the use of radium in the United States. He completed not long ago a work on Mme. Curie and her monumental discovery. Dr. Abbe was born and educated in New York.

Personal.—Dr. Charles Calvin Yerbury, of Brooklyn has been nominated for commission as first lieutenant in the medical Corps of the Twenty-third infantry.

Dr. and Mrs. D. M. Kaplan, of New York, announce the birth of a son on April 14, 1921.

Dr. William S. Thayer Resigns.—After having for several years filled with distinction the position of Professor of Medicine at the Johns Hopkins University and physician in chief of the Johns Hopkins Hospital, Dr. William S. Thayer has offered his resignation to take effect on July 1, 1921. The appointment of Dr. Thayer as full time professor of medicine was made to fill the vacancy created by the death, in 1917, of Dr. Theodore C. Janeway. During the war, Dr. Thayer was made chief medical adviser of the American Expeditionary Force with the rank of brigadier general. He will return to his private practice.

New York Electrotherapeutic Society Organized.—At a meeting held at 30 West Forty-fourth Street, on March 9, 1921, the New York Electrotherapeutic Society was organized, and the following officers elected: Dr. Victor C. Pedersen, president; Dr. Harold D. Corbusier, Dr. I. Seth Hirsch, vice-presidents; Dr. Herman C. Frauenthal, treasurer; Dr. Richard Kovacs, secretary; Dr. Frederic de Kraft, Dr. A. Bern Hirsh, Dr. William Benham Snow, Dr. Lucy Osborn Wight, members of executive committee. Regular monthly meetings will be held on first Wednesdays of each month, to which all physicians interested in electrotherapeutics are welcome.

Ambroise Paré.—Paul B. Hoeber, New York, published in April *The Life and Times and Ambroise Paré,* by Dr. Francis R. Packard, of Philadelphia, editor of the *Annals of Medical History* and author of the *History of Medicine in the United States.* Ambroise Paré (surgeon to Charles IX) was the father of modern surgery, and was the first to use the ligature. In addition to being a surgeon, he was a courtier and a statesman. The history of Paré's activities gives an interesting picture of Renaissance France. It is interesting to know that the career of Paré as a military surgeon takes us over the same battlefields that were fought on by the A. E. F. in the late war. Not only medical men, but those interested in French history, will be interested in this book.

New York Guard to Have New Medical Regiment.—Adjutant General Kincaid announced the organization of a new medical regiment to be attached to the Twenty-seventh Division, New York National Guard. Headquarters will be at the armory at 56 West Sixty-sixth Street, New York.

The regiment will consist of the Second Ambulance Company of Rochester, redesignated as the 104th Sanitary Company; Third Ambulance Company, New York, reorganized as the 104th Ambulance Company; Fourth Ambulance Company of Syracuse, motorized ambulance company, to be the 105th Ambulance Company; Third Field Hospital, Brooklyn, redesignated the 104th Hospital Company; Second Field Hospital, Albany, redesignated 105th Hospital Company. Three new units are to be organized.

Scientists Discover Serum that Conquers Yellow Fever.—Dr. Hideyo Noguchi, of the Rockefeller Institute for Medical Research, speaking of the great importance of the discovery of a preventive vaccine against yellow fever, at a recent meeting of the Brooklyn Institute, said the death rate from yellow fever has been reduced by the use of serum from fifty to nine per cent. The serum now being used is several hundred times more powerful than the vaccine used successfully in Ecuador. In the Central American countries a person who has been vaccinated against yellow fever now receives a certificate permitting him to travel, without quarantine detention. This fact is mentioned to show the economic gain to the Latin-American countries of complete control of yellow fever.

◆

Died.

Buys.—In Brooklyn, N. Y., on Wednesday, April 20th, Dr. Thomas Alexander Buys, aged fifty years.

Commiskey.—In Brooklyn, N. Y., on Friday, April 15th, Dr. Leo John Joseph Commiskey, aged forty-two years.

Couch.—In Nyack, N. Y., on Wednesday, April 20th, Dr. Louis Bradford Couch, aged sixty-nine years.

Cristman.—In Herkimer, N. Y., on Friday, April 8th, Dr. Harvey J. Cristman, aged eighty years.

De Nancrede.—In Ann Arbor, Mich., on Tuesday, April 12th, Dr. Charles Beylard Gureard de Nancrede, aged seventy-three years.

Donald.—In Selma, Ala., on Friday, April 10th, Dr. James Marion Donald, of Marion Junction, Ala., aged fifty-seven years.

Elliott.—In Bradford, Pa., on Tuesday, April 5th, Dr. Charles F. Elliott, aged forty-three years.

Fensmith.—In Newark, N. J., on Saturday, April 9th, Dr. Joseph Fensmith, aged seventy years.

Haines.—In New York, on Tuesday, April 12th, Dr. Charles Chandler Haines, aged forty-five years.

Hammock.—In Atlanta, Ga., on Monday, April 4th, Dr. W. F. Hammock, aged fifty-two years.

Hay.—In Los Angeles, Cal., on Thursday, April 7th, Dr. Rilla Grafton Hay, aged seventy-one years.

Hepburn.—In Annapolis, Md., on Tuesday, April 5th, Dr. Sewell S. Hepburn, Jr., aged forty-seven years.

Jenner.—In Washington, D. C., on Thursday, April 14th, Dr. Norman Richards Jenner, aged fifty-six years.

Koder.—In Philadelphia, Pa., on Saturday, April 9th, Dr. Charles A. Koder, aged sixty years.

Long.—In Sharpsburg, Pa., on Thursday, March 31st, Dr. Daniel G. Long, aged seventy years.

McCoy.—In Philadelphia, Pa., on Wednesday, April 6th, Dr. George Loren McCoy, aged forty-eight years.

Miller.—In Rensselaer, N. Y., on Monday, April 11th, Dr. Horace C. Miller, aged seventy-nine years.

Morris.—In Boston, Mass., on Thursday, April 14th, Dr. John G. Morris, aged fifty-five years.

Nunn.—In Halls, Tenn., on Sunday, April 3rd, Dr. Joshua H. Nunn, aged fifty-eight years.

Pierce.—In Warren, N. Y., on Tuesday, April 13th, Dr. William S. Pierce, aged sixty-three years.

Rice.—In Atlanta, Ga., on Saturday, April 2nd, Dr. William H. Rice, aged fifty-eight years.

Roberts.—In Louisville, Ky., on Friday, April 1st, Dr. William Owen Roberts, aged seventy-three years.

Rossman.—In Philadelphia, Pa., on Sunday, April 10th, Dr. David Rossman, of Wilmington, Delaware, aged thirty-three years.

Schalck.—In Brooklyn, N. Y., on Saturday, April 16th, Dr. Ernest Schalck, aged sixty-one years.

Seagers.—In St. Augustine, Fla., on Tuesday, April 19th, Dr. Murray Wisner Seagers, aged forty-eight years.

Seiberling.—In Allentown, Pa., on Monday, April 4th, Dr. Frederick Christian Seiberling, aged eighty years.

Van Gieson.—In Brooklyn, N. Y., on Friday, April 8th, Dr. Ransford Everett Van Giesen, aged eighty-five years.

LONDON LETTER.

(From our own correspondent.)

LONDON, *February 25, 1921.*

Workshops and Health—State Grants for Hospitals—Venereal Disease.

Dr. E. Halford Ross gave a lecture on February 23rd last on health in industry. He said in part that up to the present time most of the work of prevention had not been done in Great Britain. He pointed out that the one place it ought to be carried on was in industry. Research in London had been promoted into the cause, the carriers, and the means of prevention of the most important disease in industry, tuberculosis. Investigation into its prevalence among printers, bootmakers and others had resulted in the discovery of the cause of the disease, the carrying of grit into the lungs. Every worker should see to it that his place of work was as free as possible from dust, for uncleanliness was the cause of industrial tuberculosis.

* * *

The Duke of York, the second son of the King, on February 12th attended the annual dinner in connection with the Hospital Saturday Fund, and, in the course of a speech he made, said that the fact had to be faced that the income of the thousand voluntary hospitals in the country now did not meet the expenditure, but the possibility of these hospitals being closed had only to be suggested to be dismissed, and in no circumstances could this be permitted. On the other hand, they could not remain open without supplementation of their resources. He thought that there was no doubt that, while the spirit of generosity might be prewar in character, the means to gratify it were very much postwar, and the health of the nation being the health of the State, the time might have come when State or municipal aid was inevitable. He could only venture to hope that State aid did not necessarily mean State control. The bedside manner of a necessarily cold and rigid bureaucracy might cure suffering humanity, but it was difficult to imagine it curing sympathetically. To his mind the pressing need was to preserve the kindly atmosphere and elastic methods of the voluntary system. The speaker concluded his speech by pointing out that since its inception in 1873 the Hospital Saturday Fund had distributed no less a sum than £1,000,000 among the London hospitals and allied institutions, not to mention the surgical, dental, convalescent and sanatorium treatment given to hundreds of thousands of sufferers. The annual collections had increased by leaps and bounds, and the last two years had broken all records; 1920 being £31,386 in excess of anything that had been previously achieved. He said very truly that if everyone in London subscribed a small amount weekly through the medium of the Hospital Saturday Fund, the voluntary system of hospital maintenance in London, at least, would be secured.

It is said that the working classes generally, although their wages are vastly increased and they can well afford to contribute generously to the hospitals, are very backward in this direction. They have become so accustomed to gratuitous treatment that they seem to regard it as their right and resent the statement that it is their duty to give. They are the ones who receive the greatest benefit by far; indeed, almost the only ones who receive benefit from the voluntary hospitals. The middle classes, some of whom are deplorably poor, receive no benefit. The solution of the hospital problem here is admittedly difficult, but there must be a way out.

* * *

The report of and the evidence taken by the special committee on venereal diseases appointed by the Birth Rate Commission has been issued recently. The report is signed, among others, by Sir W. Arbuthnot Lane, Sir Alfred Pearce Gould, Sir Frederick W. Mott, Sir Humphrey Rolleston, Sir German Sims Woodhead, Dr. Eric Pritchard, Dr. Amand Routh, Dr. Agnes Dunnett, and Dr. Mary Scharlieb. The report is divided into two sections, one dealing with the medical and the other with moral aspects of the problem. It is pointed out that there are two methods of arresting the spread of an infectious disease: a, preventing the conditions under which contagion occurs, and, b, destroying by disinfection the infective organisms before they have penetrated the tissues of the body. The first of these methods, where practicable, is more certain in its effects and more successful in its results than the second. However, while the committee fully realizes that chastity is the best safeguard against the spread of disease, they are also compelled to recognize that a large number of people do not respond to moral appeals, and they believe it is of the utmost importance to prevent as far as possible by all legitimate means the development of disease in all who expose themselves to the risk of infection. In regard to methods of prevention, the committee indicated the advantage of immediate self disinfection, though they point out that this is liable to failure in the hands of ignorant, careless, unskillful, or drunken individuals. The committee agreed that the difficulties in instruction, supervision and control will certainly be greater in the case of the civil population than in the Army. Yet, having regard to the seriousness of the present situation and to the strong probability that self disinfection, where efficiently carried out, would lead to the prevention of disease in a certain number of cases in which, in the absence of prompt disinfection, such diseases would develop, the committee considers that no difficulty should be placed in the way of either, 1, the spread of knowledge as to the use and value of disinfectants, or, 2, the obtaining by individuals of such disinfectants from chemists or other sources which may yet be recommended.

With regard to disinfecting centres, the report states: Up to the present the ablution or disinfecting centres provided by or with the sanction of the local health authorities in Manchester, Portsmouth, and in some other places, have not been established long enough to enable accurate conclusions to be drawn as to their value in preventing the development of disease in persons who have exposed themselves to the risk of infection. The committee thinks they should be regarded as an experiment and continued for a time, and that then an attempt should be made to ascertain, 1, to what extent instruction has been given in methods of self disinfection; 2, how far knowledge gained of, a, self disinfection, b, disinfection under medical supervision, has been successful in preventing venereal disease, and whether there are any reasons for thinking that such instruction in prophylaxis has led directly or indirectly to any increase in promiscuous sexual intercourse in that area. Regarding the instruction which is or may be given with the sanction of local health authorities at such centres or in other places, personally or by posters, or by printed leaflets, the committee considers it is very desirable, 1, that, along with instruction in the value and the method of disinfection, the greatest importance should be laid on chastity, not only as the right way of life but also as the only certain means of preventing venereal disease. 2. That due, but not undue efficacy, should be claimed for self disinfection as a method of preventing venereal disease. The inquirer should be told to regard this as a method of first aid in preventing a possible danger, to be followed by prompt resort to medical advice. 3. The inquirer should also be definitely warned against the use of such disinfectant substances for the treatment of the developed disease; that is to say, the serious risk of delay and the danger attendant on self treatment should be fully explained to him. If future experience should show that the ordinary male citizen is both willing and able, after careful preliminary teaching, to carry out self disinfection with promptness and reasonable efficiency, then, in the opinion of the committee, it would not be necessary or desirable for local authorities to provide facilities at special ablution centres which the individual ought to obtain for himself, seeing that the risk of infection has been incurred as the result of his own misconduct. It is evident that to provide early treatment centres for the whole population would be quite impossible.

There are 185 treatment centres for venereal disease, which last year cost a very large sum. There are only five prospective early disinfection centres in those 185 centres, and, as far as is known, only one in Manchester is in operation; although in areas where curative treatment centres are necessary, disinfection measures are equally if not more necessary to prevent the spread of infection to innocent women and children. A number of boroughs and the London County Council have rejected these early disinfectant centres as impracticable and costly. Any further burden on the ratepayers is not likely to be tolerated when most thinking people consider that the onus of keeping free from infection should fall on the individual who exposes himself to risk by promiscuous intercourse. As for the availability of disinfectant substances to individuals and the public generally, the committee is of the opinion that any administrative or legal difficulties that may at present prevent individuals from purchasing disinfectants on their own initiative as a protection against venereal disease from chemists should be removed, and that the section of the Act dealing with this matter should be rendered more explicit and amended if necessary.

The committee thinks that it is undesirable that druggists should be at liberty to advertise any disinfecting substances, or to recommend any substances not approved for this purpose; and it further considers that, apart from the authorized sale by druggists and the provision by medical men and at various disinfection centres, the public advertisement and sale by unauthorized persons of disinfectants or substances for the avowed purpose of preventing or treating venereal disease should be illegal. The committee discusses the prevention of venereal infection as a result of marriage, and says it cannot recommend legislation which would make it obligatory for all persons contemplating marriage to produce health certificates.

The first place should be given to the appeal for chastity as in itself a moral obligation, as consistent with good health, and as the most certain safeguard against venereal disease. The second place should be given to the demand that any man or woman who, in spite of such advice and warning, has either contracted such disease or been exposed to the risk of infection, should at once as a personal moral obligation seek competent medical advice to prevent its development and extension. In the third place, the facts regarding the serious danger of communication to innocent persons which the disease involves should be used to reinforce this moral obligation on the grounds of family affection, patriotism and humanity. In the fourth place, as regards self disinfection, it should be insisted that if carelessly or incompetently carried out, it will afford no protection, and may even increase disease by encouraging a fake sense of security, and that it cannot therefore be regarded as an adequate fulfillment of the moral obligation not to contract or spread disease. The committee, in summarizing its views on certain aspects of the moral question, says that the recommendations of the preceding medical section of the report may be justified on the following grounds: 1. It is a moral obligation to prevent the spread as well as to effect the cure of the disease. 2. These diseases are incurred by many young persons in a moment of weakened control, as, for instance, when under the influence of alcohol. 3. Innocent persons may be involved in the appalling consequences, individual and racial, of venereal disease. 4. While it must be frankly admitted that there is a moral risk involved in encouraging immorality by appearing to assure immunity from consequent disease, its does not seem morally impossible so to deal with the whole matter as to secure even a moral gain if the conditions already stated are maintained.

It may be said that the committee is a mixed one, comprising a bishop as president, some laymen and medical men who hold somewhat antagonistic views with respect to early self disinfection. While the moral point of view was pressed, it will be observed that opponents of early self disinfection are beginning to recognize that this method is not incompatible with morality. Realization is coming that, in the case of venereal diseases in particular, prevention is better than cure. It is true that it will be considerably more difficult to carry out early self disinfection among a civilian than a military population, but the difficulties should not be insurmountable. Much educative propaganda will be needed, and the sale of disinfectants for this purpose must be carefully regulated. The report, however, seems to indicate that medical opinion is veering toward early self disinfection as a potent means for preventing the spread of venereal disease.

Book Reviews

PSEUDOPSYCHOLOGY.

Mysticism, Freudianism, and Scientific Psychology. By KNIGHT DUNLAP. St. Louis: C. V. Mosby Company.

A partisan of mysticism of Freudianism, or of scientific psychology might well take issue with the confusion of terms and the gross misrepresentations of this book. A brief examination of its statements, however, will suffice to convince that in the final issue there is nothing to fear and certainly nothing to hope as to clearness of understanding from this form of discussion.

Take, for example, the discussion and illustration of the two kinds of knowledge which the author gives as the correct division. In scientific psychology it is not clear where the "knowledge of inference or reason" has a right to step off from perceptual knowledge. But if it has such a right, why may not the mystic as well go spinning on infinitely from such a starting point until he has convinced himself that he has "a third kind of knowledge," something beyond the author's legitimized "inference or reason." That the emotions have anything to do with the leaps and bounds of such "knowledge," Dunlap curiously rules out even from the mystical: "In usual cases . . . the experiences of a patient under anesthesia seem to be pseudomystical and obviously emotional only."

Dunlap is evidently not aware that the business of the "tenderminded" psychoanalyst, the Freudian, is the actual scientific pursuit of all this mental possibility, perception, experience, memory of past sensuous and perceptual experience also, and the inferential "knowledge" that the individual has added to this or distorted out of it. His emotions have had something to do with leading his intellect into mysticism or rationalism, or perhaps they have aided it along the path of a clearer, calmer science.

At any rate, Freudianism aims at a scientific understanding of all these mental excursions of humanity, and therefore its psychology merely has a wider field for actual scientific labor upon the psyche, if that is the field from which psychology legitimately takes its name. A "science" of psychology which "no longer assumes a world of mental facts requiring study apart from the real world" naturally has no interest in mystical flights and their significance to the human mind creating them, nor in a deeper psychology such as Freudianism which labors—the author to the contrary—to examine even such mental activities and understand them.

Dunlap and his ilk have not only narrowed their boasted scientific activity to a very superficial field; they have so excluded depth from their work that any mention of another dimensional activity of the human mind is most confusedly defined, as is mysticism here, or any work upon these complicated activities of the mind is grossly falsified and misrepresented. This little book becomes a monument of inaccuracies. Terms are badly confused, and wherever there is actual statement of correct exercise of scientific observation, given by the author as the method of his psychology, he is curiously or wilfully ignorant that he is stating cardinal principles and methods of the Freudianism he strongly condemns.

Until he knows more, both of mysticism as a human product and Freudianism as a method to understand it, along with other possibilities of the human psyche, he can hardly present or practise a truly "scientific psychology."

PSYCHOLOGY BEFORE ARISTOTLE.

Theophrastus and the Greek Physiological Psychology Before Aristotle. By GEORGE MALCOLM STRATTON, Professor of Psychology in the University of California. London: George Allen and Unwin, Ltd.; New York: The Macmillan Company. Pp. i-227.

A peculiar feeling of gratitude steals over one on closing this book that this psychologist of long ago has been brought so concisely and clearly before us today. The time between Theophrastus and the psychologists of the present time seems to shrink away. Or, rather, it seems to count for nothing except a span of years over which human thought may scintillate so that from past and present brilliant flashes of recognition of facts and of insight into their relationships seem to merge into one gradual increase of knowledge. One is tempted to forget the sluggish pools of obscurity in which in the intervening centuries observation has been submerged and from which speculation has reared a bemuddled head in regard to psychological truths. One clasps hands with this simply clear observer and thinker of old, this crisp critic of the speculations of others, and feels him a keenly alive psychologist of today. True, one has to strip away some crudities of statement, of interpretation, which could not be permitted in modern writing.

Many facts toward which Theophrastus groped are now stated definitely and positively, because physics, physiology and psychology have yielded up far greater stores of knowledge than were possible in his day. Yet there are facts set down by him which are part of the knowledge which belongs to psychology today. His sincerity of observation and of testing of theory by fact is a stimulus to every genuine psychologist. His appreciation of the relation of sense organ and external object, his pragmatic sense of purposeful relationship, make his psychology a part of the developing science of all times.

Professor Stratton has helpfully expounded in brief this writing of Theophrastus on the senses, and also his method of criticism of his immediate predecessors in psychological thought, to which this writing is largely devoted. Then the text of Theophrastus's own words is presented in the original Greek and in a translation printed on the opposite page. Full notes are also appended to the text. In this manner Professor Stratton has made most accessible a work stimulating to the psychologist of today and valuable as a record in the history of psychology.

SURGICAL CLINICS.

The Surgical Clinics of North America. Volume I, No. 1, Philadelphia Number, February, 1921. Published Bi-monthly by W. B. Saunders Company, Philadelphia and London. Pp. x-259.

The volume at hand is the first of the new series of *Surgical Clinics,* which will hereafter include the work of surgeons in all the large cities of the country, instead of Chicago alone, as heretofore. The publishers have produced a beautiful and instructive volume.

In addition to surgical clinics by nine representative Philadelphia surgeons, there is a splendid contribution on pancreatitis by John B. Deaver, and a reminiscent introduction by W. W. Keen. The subjects treated are quite varied and numerous, twenty-eight distinct clinical cases being presented. One almost feels himself seated in the ampitheatre, watching the cases and listening to the clinician, as he passes on from case to case. Perhaps the most interesting clinic in the series, according to the present reviewer, is the excellent one on hydatid cyst of the liver, by Dr. J. C. Da Costa. Not only is this a learned exposition of this rather rare condition, but there is an abundance of the "human" element, wit and humor, that carries the reader along as if he were reading a novel instead of a surgical treatise.

CLEVELAND HEALTH SURVEY.

The Cleveland Hospital and Health Survey. THE CLEVELAND HOSPITAL COUNCIL, 1920. Pp. 1082. In Eleven Parts.

Eleven nice looking books, full of things as they are, and what is the best plan to make them as they should be. Here is the menu, not inconsiderable:

General Environment, Sanitation, Public Health Services, Private Health Agencies, A Programme for Child Health, Tuberculosis, Venereal Disease, Mental Diseases and Mental Deficiency, Industrial Medical Services, Women and Industry, Children and Industry, Education and Practice in Medicine, Dentistry, Pharmacy, Nursing, Hospitals and Dispensaries, Method of Survey, Bibliography of Surveys, Index.

But this tells you very little. There are eight pages of subheadings through which the weakest, the wickedest, or the most idiotic inhabitant of Cleveland can escape notice and riot his evil undisturbed. There is no slurring over matters. It is shown how the weighty matters of tuberculosis, venereal diseases, garbage, education, have been woefully left alone. It is shown, clearly, convincingly, what that scant amount of notice will mean. It is pointed out that one of the first obstacles in cleaning up a city is for the people not to know the necessity for reform. The introduction by Dr. Haven Emerson is well worth studying; he shows so well that vision, imagination, insight into needs, sufficient funds to supplement the public services for health, all these need the direction of a trained officer, or a professional to set them working. Cleveland has Health Centres, which are little more than district offices. Dr. Emerson wants these enlarged and increased to sixteen, one for about every fifty thousand of the people.

He does not seem particularly fond of the Public Coroner. He is abolished in New York, "and there is nothing to be said in favor of him, his office, or the value of his medieval and hollow legal functions."

The hundreds of private health agencies are to be worked as an integral part of the charities, particularly in those working for the child's health before and after birth. A great many of the persons who helped with these will object to being put under regular heads, but there are "old ladies of both sexes" in every town. The foreign mothers are more willing than the American ones to get the children put out to work and will always try to evade the law. A study of this book (No. vii) will give some interesting details concerning the work of women and children. How many of us know what "Blind alley jobs" mean? or indeed, so many terms which are mere words to us.

The Committee does not stand on a tower and criticize the civic world. It meekly sets to work to see wherein its own efforts have been lacking, and finds them first in a noticeably deficient recognition both by the City and the medicos of many things in medicine which now demand constant study. Education and practice in medicine, dentistry and pharmacy is brought forward, the School of Medicine of Western Reserve University, its advantages, its failings, its needs and possibilties are clearly shown. It is recommended that the university should undertake in its medical school an education to fit its students to take a share in the new Health Campaign. As quasi health officers, as knowing industrial hygiene, as students of epidemiology, the need is great. From diligent inquiry at the right quarters it is found that there is an unusual indifference among Cleveland doctors to the value of laboratory tests in confirmation of diagnosis or as checks upon clinical impressions and physical findings in the cause of disease. The use of tests in the fields of blood chemistry and immunology is still practically unknown in Cleveland.

Here is one difficulty which all States do not have, a circulation of twenty-one locally published non-American newspapers to contend against. There are eleven foreign language papers. Of the twenty-three doctors with offices in town and advertising in these newspapers some use six, others four or less. Some only make use of them to make known their name and address. Twelve different languages are used for the estimated 513,000 foreigners registered (1917). The appeal of a common language is strong, so is the appeal of race. The A. M. A. series of pamphlets on nostrums and quackery has a limited circulation among those who least need their warning. Priests, public nurses, the managers of industrial plants, libraries might all help here. There is only one State Medical Inspector for a city of nearly 800,000 people. He surely must be busy.

With regard to nursing; only in one Cleveland hospital, Mt. Sinai, was a high standard of correlation found. In most, there were not enough nurses and all were overworked or instructions not well given. Instructors are overburdened with administrative work. The recommendations are that a University School of Nursing be established: this school to be on the same academic basis as the undergradute schools. The instructors to be members of the university staff. The combined university and hospital course to lead to the B.S. degree. The school should make contracts as to receiving students in special subjects with all the hospitals. Meanwhile, the Cleveland Training School should start the work.

Dr. Michael N. Davis, who introduces the big subject of Hospitals and Dispensaries, finds ample room for criticism. Studies of sickness made by the Metropolitan Life Assurance showed that from 20,000 to 30,000 of greater Cleveland were more or less always ill. About ten per cent. come to the hospitals. A careful and productive study of these places must be concerning the attitude of the well-to-do, the poor, the foreign born toward them. What the merits of each place towards deserving a favorable opinion, how faults might be cured, funds increased more wisely spent. There is the eternal sadness of hospital cases sent home too soon; the curative quietness too soon over. The good care, the wholesome food abruptly stopped. Cleveland is only one of the many cities much in need of money and specialists of learned heads and wise hearts.

BEHAVIOR OF CROWDS.

The Behavior of Crowds. A Psychological Study. By Everett Dean Martin. New York and London: Harper & Brothers, 1920. Pp. 311.

"Our society is becoming a veritable babel of gibbering crowds." "The tendency to crowd-mindedness has greatly increased in later years." This is the indictment of Everett Dean Martin, though he excepts some crowds and really means those whose peculiar mental condition occurs when they act and think together either immediately where the members of the group are present, or remotely, when they affect one another in a certain way through the medium of an organization, party, sect or press. He alludes to the habit of crowd making as daily becoming a serious menace to civilization.

Now, as he finds the audiences at Cooper Union the most alert, sophisticated, and reflective he has ever known, his experiences are worth listening to and can be verified by any one who thinks for himself. The noisy orator at the ordinary mass meeting knows how to get the crowd, and the functional value of bathos, ridicule and platitudes. There are sundry phrases which never fail to rouse the crowd: "Justice for all," "Brotherly love," "Our glorious Constitution," "Common humanity," and so on. The ordinary crowd is always against somebody or something, and the leaders blow steadily on this idea until they move the multitude at will. Big lies are dressed in scanty truths at political meetings, and the audience is flattered by being told of their power to overcome enemies. A short time ago the reviewer saw an audience at a Freedom for India meeting gradually worked up to rage against the "brutal British rule." A fine day had dwindled the meeting to a small audience in a big theater. An Indian's speech, fairly truthful, did not arouse much enthusiasm; then an American army captain got up who described the greed, cruelty and treachery of England for the past 700 years. She had recently starved 350,000 people while sending their grain crops to England. Natives were shot down in cold blood. Indians had to come to America, the land of the free which had cast off English tyranny (loud applause) to get help. "Yes," the speaker shouted, "and what was she doing today? Building 400 aircraft in Canada and turning Halifax into a submarine base, placating Mexico for her oil, then down she would come on the United States and cause ruin and desolation." The people were tremendously moved at this picture and stormed noisily. This was the correct time for a collection. They were asked to pledge one hundred dollars each for the oppressed. Shouting was one thing, giving another. Response was very slow. The chairman hit on another vein: "Who will give ten dollars for Ireland's sake, where today the people are creeping about in terror of their lives?"

The answer was quick, and pledges were given. The names of those in Ireland recalled to memory many grievances rousing fresh outbursts of enthusiasm, and giving a few more instances of British cruelty and oppression gave each one the feeling that he was steadily enlisted against the tyrant, and therefore he was glad, oh, very glad.

This feeling of self satisfaction is at the root of much success in crowds. Billy Sunday knew its value. "The gambler, profligate, drunkard, unsuccessful . . . was now redeemed, there was joy in heaven, he was a convert, not an outcast, but once again somebody, worth saving. He could claim the Kingdom of Heaven and the right to be a red blooded American. As every crowd is against someone, so he is against the devil, one of a great crowd, all hating. The evangelist rouses him, the socialist spurs him on by the idea of a great world change to come. The working class will then be supreme, everyone will be educated, production increased until there is enough for all; the whole wicked past will be left behind. But happy the leader who can move a crowd to take up arms against the oldest of enemies—Ignorance. For although Labor may be ruler, there will be just the same old struggle to get their share of the social revolution among the workers in each industry.

Education as a cure for crowd thinking is the idea Dean Martin holds out; real education will stave off the increasing dearth of individual intellectual curiosity. "The mental habits of American democracy are probably best reflected today by the best seller novel, the *Saturday Evening Post,* the victrola and the moving picture." The writer's own experience as a public teacher convinces him that such little genuine intellectual interest as there is in this country is chiefly confined to immigrant Jews.

"The first and greatest effort must be to free democracy from crowd mindedness by liberating our own thinking. We must give up crowd mummery, which flatters our self esteem."

All in the book is well and wisely put. Examples of crowd-thinking can be seen any Sunday in the seemingly intelligent people who gather in great numbers round some of the agitators for labor reform, for civic reform, or the upholding of some new religious idea. Liberty, Equality, Fraternity does not imply liberty to make fools of ourselves, nor fraternity the expedience of proclaiming brotherhood with every windy, bathodical jackass.

DISEASES OF SKIN.

Compend of Diseases of the Skin. By JAY FRANK SCHAMBERG, A. B., M. D., Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania; Fellow of the College of Physicians of Philadelphia; President of the American Dermatological Association, etc., etc. Sixth Edition, Revised and Enlarged, with One Hundred and Nineteen Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xiv-314.

That of which there is little known, men most desire to know, and if, on turning to the index, they find no reference, it is concluded that the writer did not know his own subject, or by averse circumstances, or laziness, has nothing to say. Having nothing original, he should at least gather the opinions of others and let us go as far as they have gone. This is not a criticism of Dr. Schamberg's book, but rather a commendation for his inclusion of much which most works lack, especially the translation of terms, conveying lucidity to many besides the ordinary student, who remembers a term because of its meaning.

But to introduce an author whose book has already appeared five times is superfluous, except to tell what of new he has added. The whole text has been revised; the treatment of syphilis rewritten, and new chapters added on some of the rare diseases. Some 180 forms of disease may attack this beautiful skin of ours, even to the devilish one of growing horns (cornu cutaneum) at the nasal base. Their usual size is about an inch, but no one need despair, because they have been seen twelve inches. It is almost a pity the author has not a word of warning against the plastering of paint and powder which is ruining the faces of so many pretty women.

X RAYS.

General Practice and X Rays. A Handbook for the General Practitioner and Student. By ALICE VANCE KNOX, M. B., B. Ch. With Chapters on the Production of X Rays and Instrumentation by ROBERT KNOX, M. D., C. M., M. R. C. S., L. R. C. P. Containing Thirty-two Page Plates and Fifty-six Diagrams in the Text. London: A. & C. Black, Ltd., 1921. Pp. xiv-214.

In the earliest days of x raying the art was known to few except the really scientific. If an ordinary photographer were employed, he only knew disease from a photographic point of view. The doctor could not interpret correctly, not realizing the queer things a camera can do, the patient was perplexed and nervous, imaging a slight mistake and—electrocution, or at the least a severe shock, when the current was turned on. Even now he is suspicious of the free meal supplied and often disappointed at the plates' appearance.

Ignorant photographers, puzzled doctors, alarmed patients, still exist; but a study of some of the earliest books and plates will show how very far we have traveled. There have been accidents, deaths, but faithful work is slowly dissipating ignorance, and a well written book such as this will make the practitioner more cheerily confident in his work, particularly the chapter on The Sphere of Usefulness, with its notes on Interpretations.

The chapter by Dr. Robert Knox on The Production of X Rays and Instrumentation will tremendously help the local man who has to be his own photographer, and, in the beginning, is apt to superconscientiously buy all the instrument maker says he ought to. One of London's cleverest men, the president of the Röntgenological Society, is especially clever in showing what the doctor does not need, and, during the war, was very chucklingly proud of his home made devices.

The book is not a réchauffé of other men's ideas, but an honest, capable attempt to help busy men. As such, it will be pleasant and profitable all through.

ANESTHESIA.

Nitrous Oxide-Oxygen Analgesia and Anesthesia in Normal Labor and Operative Obstetrics. F. H. MCMECHAN, M. D., Editor. A Monograph. Pp. xii-92. The National Anesthesia Research Society, Columbus, Ohio.

In 1878 the Frenchman, Paul Bert, recommended nitrous oxide in obstetrics, and, acting on this, Klikowitsch, of Petrograd, in 1880 reported use of it in twenty-five labor cases. Then came reports by Tittle in 1883, Doederlein in 1886, and Hillischer in 1887. Clifton Edgar, of New York City, in 1890, in his English edition of Winckle's *Midwifery*, first brought the matter to the notice of American obstetricians and anesthetists. The author follows the course of the drug down through the years, giving its failures and successes, its enemies and favorers. The monograph has been written especially to show what it may accomplish in normal labor and operative obstetrics, under a man first grounded thoroughly in its physiopathology and administration. A consideration of chloroform in labor is given, of the blood changes, devices for facilitating the administration of analgesia, and the reactions of various types of patients, also the various forms of it which beset both mother and child. Every difficulty which may arise is met thoroughly and compared with other analgesics. The opinions of men who have used it are also given, the conclusions being that, while the proper use of nitrous oxide-oxygen analgesia and anesthesia in normal labor and operative obstetrics may do much to safeguard the life of mother and child, the hope of reducing the mortality rests much more in the disposition of the midwife, who delivers fifty per cent. of the women in larger cities. In this fact medicine is brought to face a problem of vast economic importance, which is singularly parallel to the problem of professional anesthesia.

The old idea that the Almighty meant women to be pained and plagued during delivery has nearly died out, though with some elderly ones it still lingers. "The more pain, the more pleasure," these say, taking a grim pleasure in the opening of the gate of life amid groans and cries.

DUST.

Dust. By Mr. and Mrs. HALDEMAN JULIUS. New York: Brentano's, 1921. Pp. 251.

To those who only know the dust which slowly settles in neglected house or on unrainwashed foliage, which powders the roads and makes driving unpleasant, the title *Dust* sounds not so dreary; but to those who have seen a dust storm arise, seen it gather in clouds and rush in ever gathering storm of blinding, stinging, lashing forcefulness, seen it slash fair flowers and tender shrubs, and irretrievably darkening the world for the funeral it creates, seen bird and beast cower and hide, they know what dust means, what it can do. Though high above them the eddies are carried, they will descend on skin and clothes, giving one dust to eat and damaged eyes, dirt and discomfort.

It settled on the open Kansas prairie, on the sunburnt, weary family, the sick, dying baby and the lassid father trying to quiet it, on the supper preparing mother, on Nellie, the little girl, and Martin, dust, dust, and water scarce. The boy, only fourteen, had had to work for his sick father, and finding no room in constant work for any joy to grow, had ruthlessly trodden on any such impulse, and now, grimly set to hard work around the one room shack on the Kansas prairie. At twenty-three he stands there with father and mother gone forever, and Nellie married, surveying the good result of incessant toil, and trying to feel exultant at the feel of a check in his pocket for sixteen thousand dollars, received for the prospective coal mining rights on his farm land. He dimly hoped that marriage might cause happiness to spring, so he married Rose Conroy, and was soon resenting the troublesome feeling a companionship gave him, and trying to conquer them with hard work in which he made his wife share, and through which her first child was born dead. Rose did not irritate him by what she did but by what she was. She was too docile, loved him too much. All life seemed dry and dusty. Religion gave no help. In his opinion it was a very carnal institution conducted by very carnal men and women. He despised their heaven, though he tolerated their belief. Almost with vague fear he felt love coming, though it was only for his little niece, Rose, who came on a visit. But to his second son he meted out the same life as he had had himself when a child. He hated his dreamy ways; he hated the indulgence of his mother; he even hated the mother herself, but did not restrain the love little niece Rose had awakened, and it aroused a passionate pleasure when she came again on a visit, thirteen years later. He loves her, tells his wife so, and would tell young Rose the same, but the thought of giving up the farm to take her away brings up the old demon of acquisition and stubbornness. He buries his love in dust. His son hates the farm, hates his father; always work had stolen his treasures, his dreams, the things which made life living. He refuses to work there, and is killed as a shot firer in a coal mine. The death, the mother's grief, do not affect Martin's mood, except that they note a failure on his part to get what he wanted, a failure on theirs to submit to his way of thinking. "I am not to blame; he could have stayed here if he had worked. What did he expect out of life, anyway? It's only a lot of senseless pain; every moment is pain. It's only dust and dust, with rain once in a while." He realized he was now one of those men who loved no one on the whole wide earth. Great success in farming was his; his science had defeated the commoner woes which assailed his brethren, but blood poison, through treating an aborting cow, brought him face to face with the dustiest part of life, the leaving of all his property to those who would not care for it as ardently as himself. "He cogitated on the journey he was to take, and it made him not afraid, but angry. The end is as blind and senseless as the beginning on this farm—drought and dust." He had made a fortune; no stocks like his, yet nobody cared for what he would leave. A little less of grim discipline would have meant more to Rose than all his dollars. His boy had rejected them. The game of success had been cleverly played, but the profits were not animating.

The story of this man is sad, and well told, especially where just once the little flame of love flares up into burning light until quenched by the reflection that Rose will be still in the bright twenties when he is entering the shadowy sixties, and his pride revolts at the idea that she may treat him as too old for her; so the flame, though leaping fitfully, slowly sank to darkness.

THE HUNT.

Jenny Essenden. By Anthony Pryde, Author of *Marqueray's Duel.* New York: Robert M. McBride & Co., 1921.

This is a weird and rambling story in which the figures of a man and two women pursue each other across England and part of France in a chase that ends when one of the women gets the man by sheer will power plus a marriage certificate. The theory seems to be that in order to secure a man one should run the other way, but Maisie Archdale, the successful huntress, disproves this by a streak of luck.

Maisie follows the old recipe for rabbit stew—"First catch your rabbit." Finding the man of her choice alone and in a somewhat mellow mood one moonlight night, she persuades him to marry her—just for a week. But Mark Sturt is too much of a gentleman to take advantage of anyone that way, so, after the marriage ceremony, they spend a perfectly platonic week together and Mark shortly afterward falls into the clutches of another and less particular lady who does not demand a marriage certificate and who gets several months of Mark—not platonically—as a reward. This is where the marriage certificate gets in its good work. For the lady who did not demand one is, of course, a siren and an adventuress who ruins Mark's political career one day when he leaves her without sufficient explanation. Mark is again alone, not as mellow as the first time, and his wife pursues him again. This time he capitulates.

Jenny Essenden, by the way, is the adventuress. It is her tactics that are successful when Maisie's franker advances fail. But Maisie has the marriage certificate and Jenny hasn't. We wonder whether this book is intended as an ironic tale or a serious representation of virtue triumphant. If it is the latter, virtue has a close shave.

UNCANNY.

Wind Along the Waste. By Gladys E. Johnson. New York: The Century Company, 1921. Pp. 278.

Everyone knows the uncanny feeling which comes on the first night in a strange bedroom where the house is isolated and arrived at when it is too dark to see the surroundings. Everyone, too, knows the moral antifear stories of young days, when the mysterious noises and halfseen figures turned out to be the wind, or cats, or rats, to our great disappointment, for, secretly, we just longed for ghosts.

Well, the reader stands with Ann Belmont in the gloomy bedroom at Dune House, afraid of the thick curtains which seem to move, afraid of the wardrobe for fear of its possible occupant, afraid to look under the bed, afraid to get into the bed, and, to add to her dismay, the door is locked from the outside, the windows are wired outside.

There is the usual locked room which no one may enter. A softly stepping Chinee, a shot in the night, a death wail, mysterious writings by someone who couldn't possibly have gained access to where they are found. All this makes Dune House a place of shuddering mystery, for no clue is found, and the reader is kept waiting and wondering right away to the end of the book. What is found it would not be fair to tell, though many always look at the last chapter first. The mystery keeps one guessing all the time, and the solution is unexpected and cleverly led up to. The book is unusually good.

◆

New Publications Received

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

DUST. By Mr. and Mrs. Haldeman Julius. New York: Brentano's, 1921. Pp. 251.

TEETH AND HEALTH. How to Lengthen Life and Increase Happiness by Proper Care. By Thomas J. Ryan, D. D. S., and Edwin F. Bowers, M. D. New York and London: G. P. Putnam's Sons, 1921. Pp. xii-264.

ROAMING THROUGH THE WEST INDIES. By Harry A. Franck, Author of *A Vagabond Journey Around the World, Zone Policeman 88, Vagabonding Down the Andes,* etc., etc. Illustrated with Photographs by the Author. New York: The Century Company, 1921. Pp. xiv-486.

FROM THE UNCONSCIOUS TO THE CONSCIOUS. By Dr. Gustave Geley, Director of the Institut Metapsychique International. Translated from the French by S. De Brath, M. I. C. E. With a Foreword by J. D. Beresford. New York and London: Harper & Brothers. Pp. xxvii-326.

RATIONAL TREATMENT OF PULMONARY TUBERCULOSIS. By Charles Sabourin, M. D., Medical Director of the Durtol Sanatorium, Puy-de-Dome, France. Authorized English Translation from the Sixth, Revised and Enlarged, French Edition. Philadelphia: F. A. Davis Company, 1921. Pp. vi-439.

A DICTIONARY OF SCIENTIFIC TERMS. Pronunciation, Derivation, and Definition of Terms in Biology, Botany, Zoölogy, Anatomy, Cytology, Embryology, Physiology. By I. F. Henderson, M. A., and W. D. Henderson, M. A., B. Sc., Ph. D., F. R. S. E. New York: D. Van Nostrand Company, 1920. Pp. viii-354.

A SHORT HISTORY OF RUSSIAN LITERATURE. Translated from the Russian of Shakhnovski. With a Supplementary Chapter Bringing the Work Down to Date (Written Specially for this Book) by Serge Tomkeyeff. London: Kegan Paul, Trench, Trubner & Co., Ltd.; New York: E. P. Dutton & Co., 1921. Pp. 180.

EYE, EAR, NOSE, AND THROAT NURSING. By A. Edward Davis, A. M., M. D., Professor of Diseases of the Eye in the New York Postgraduate Medical School and Hospital, and Beaman Douglass, M. D., Professor of Diseases of the Nose and Throat in the New York Postgraduate Medical School and Hospital. Second Revised Edition. With Thirty-two Illustrations. Philadelphia: F. A. Davis Company, 1920. Pp. xv-346.

BLIND MICE. By C. Kay Scott. New York: George H. Doran Company, 1921. Pp. 321.

MARGARET FULLER. A Psychological Biography. By Katherine Anthony, Author of *Mothers Who Must Earn, Feminism in Germany and Scandinavia.* New York: Harcourt, Brace & Howe, 1920. Pp. v-223.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Volume the Thirty-eighth. Edited by John H. Jopson, M. D., Recorder of the Association. Philadelphia: William J. Dornan, 1921. Pp. xlvi-709.

ELEMENTS OF SURGICAL DIAGNOSIS. By Sir Alfred Pearce Gould, K. C. V. O., M. S. (Lond.), F. R. C. S. (Eng.), and Eric Pearce Gould, M. D., M. Ch. (Oxon.), F. R. C. S. (Eng.). Fifth Edition. Revised, with Sixteen Radiographic Plates. New York: Paul B. Hoeber, 1920. Pp. xiv-722.

LE SYMPATHIQUE ET LES SYSTEMES ASSOCIES. Anatomie Clinique, Semiologie et Pathologie Generale, Du Systeme Neuro-Glandulaire, de la Vie Organo-Vegetative. Preface de pr Pierre Marie. Deuxieme Edition Refondue et Augmentee. Paris: Masson et Cie., 1921. Pp. xxiv-395.

THE PSYCHOLOGY OF ADOLESCENCE. By Frederick Tracy, Ph. D., Professor of Ethics in University College, University of Toronto; Author of *The Psychology of Childhood,* etc. New York: The Macmillan Company, 1920. Pp. x-243.

THE PSYCHOLOGY OF NURSING. By Aileen Cleveland Higgins (Mrs. John Archibald Sinclair, A. B., R. N.), War Relief Superintendent of The Stanford School for Nurses, San Francisco, California; Instructor in War Emergency Courses, University of California; Author of *May Day Magic, The Dopters, Dream Blocks,* etc. New York and London: G. P. Putnam's Sons, 1921. Pp. xvi-337.

TUBERCULOSIS OF CHILDREN, ITS DIAGNOSIS AND TREATMENT. By Professor Dr. Hans Much, Director of the Department for the Science of Immunity and for the Research of Tuberculosis at the University of Hamburg, Germany. Translated by Dr. Max Rothschild, Medical Director of the California Sanatorium for the Treatment of Tuberculosis, San Francisco and Belmont, California. New York: The Macmillan Company, 1921. Pp. 156.

IN SEARCH OF THE SOUL AND THE MECHANISM OF THOUGHT, EMOTION, AND CONDUCT. A Treatise in Two Volumes, Containing a Brief but Comprehensive History of the Philosophical Speculations and Scientific Researches from Ancient Times to the Present Day, as Well as an Original Attempt to Account for the Mind and Character of Man and Establish the Principles of a Science of Ethology. Volume I: *The History of Philosophy and Science from Ancient Times to the Present Day.* Volume II: *The Origin of the Mental Capacities and Dispositions of Man and Their Normal, Abnormal, and Supernormal Manifestations.* By Bernard Hollander, M. D., Author of *The Mental Functions of the Brain, Mental Symptoms of Brain Disease, The First Signs of Insanity, Nervous Disorders of Men, Disorders of Women, Abnormal Children, Hypnotism and Suggestion,* etc. London: Kegan Paul, Trench, Trubner & Co., Ltd.; New York: E. P. Dutton & Co. Volume I, pp. x-516; Volume II, pp. vii-361.

A TEXTBOOK OF GYNECOLOGICAL SURGERY. By Comyns Berkeley, M. A., M. C., M. D. (Cantab.), F. R. C. P. (Lond.), M. R. C. S. (Eng.), Gynecological and Obstetric Surgeon to the Middlesex Hospital; Senior Surgeon to the City of London Lying-In Hospital; Surgeon to In-Patients at the Chelsea Hospital for Women; Consulting Gynecologist to the Eltham Hospital; Examiner in Diseases of Women and Midwifery to the Universities of Oxford, Cambridge, and London; Sometime Examiner to the University of Leeds, the Conjoint Board of England, and the Society of Apothecaries, London; and Victor Bonney, M. S., M. D., B. Sc. (Lond.), F. R. C. S. (Eng.), M. R. C. P. (Lond.); Assistant Gynecologist and Obstetric Surgeon to the Middlesex Hospital; Surgeon to In-Patients at the Chelsea Hospital for Women; Gynecologist to the Putney Hospital, the Miller Hospital, and the Hospital for Epilepsy and Nervous Diseases, Maida Vale. Second Edition. With Four Hundred and Eighty-nine Figures in the Text and Sixteen Color Plates. New York: Paul B. Hoeber, 1920. Pp. 829.

Practical Therapeutics

DIAGNOSIS AND TREATMENT OF STERILITY

By Joseph H. Friedman, M. D.
New York,
Associate Chief, St. Mark's Hospital Genitourinary Clinic.

This is a subject which many of the medical men in the past have avoided. At the present time the cause of sterility can be definitely determined by careful history taking, physical examination and use of the microscope with the proper interpretation of the findings. Until recent years sterility was always thought to be due to some pathological condition in the woman which prevented conception. Now it is recognized that in a large number of cases, although the man is capable of performing the sexual act, showing that he is potent, his semen is destitute of the fecundating element, the spermatozoa, which is the necessary factor.

METHOD OF EXAMINATION.

The examination of a couple presenting themselves to a physician for the treatment of sterility should begin with a general history of both, particular inquiry being made into the history of past venereal infections and the kind of life followed by them, domestic and sexual. The question of masturbation before and after marriage, irregular forms of sexual intercourse and the use of coitus interruptus for prolonged periods are all factors to be taken into consideration.

I will now consider the actual sexual examination, first considering the examination of the man. Examine the penis as to size, abnormalities, deformities, and other conditions that might interfere with the proper performance of the act. Look for scars which are the evidence of healed chancres, and, if suspicious, the blood must be taken for a Wassermann test. The testicles should be examined, as a testicle which is normal and active should be soft, elliptical and sensitive to pressure. A hard, globular testicle with low degree of sensibility is not, as a rule, an active factor in producing the necessary fecundating element, the spermatozoa.

Look for indurations of the epididymis, which might be left as a result of past gonorrheal infections. See if it is unilateral or bilateral, as a double epididymitis will be the cause of sterility by preventing the passage of the spermatozoa from the testicles through the vas up to the seminal vesicles, where it is stored up until the time of ejaculation.

The meatus is next inspected, and a smear of any discharge taken, if present. The patient is then requested to pass his urine in two glasses and retain a little in his bladder. The next step consists in palpation of the prostate gland and vesicles through the rectum. Note is made of size, density and mobility of these organs, and the expressions of fluid from both of these organs are examined microscopically. If no pus is present, prostatitis and vesiculitis may be excluded.

DEGREE OF PROSTATIC EXPRESSION.

In our clinical work we have divided the findings of prostatic expressions into four degrees, depending upon the amount of pus cells present. If the slide shows five to ten pus cells to a field, this constitutes the first degree; ten to twenty pus cells to a field, the second degree; twenty to thirty pus cells to a field, the third degree; and more than thirty cells to a field, the fourth degree.

The route traversed by the spermatozoa is an extended, tortuous one, and obstacles may occur along the way preventing them from reaching the vesicles. A thin lubricating fluid should normally be present in the epididymis for the proper development of the spermatozoa. A thick, sticky secretion from an engorged prostate and vesicles may entangle the spermatozoa in the mucus, so that no motion will be present.

The next step is to examine the urethra anteriorly and posteriorly with an endoscope, as a localized inflammation in the urethra, a verum montanum disease, may so alter the secretion that the vitality and motility of the spermatozoa are decreased.

EXAMINATION OF THE WOMAN.

In the examination of the women, one should inquire into the marital relationship, and give advice for the correction of errors or excesses. The ovary, which is the main organ to be considered, produces the ovum and an internal secretion also. Either may be at fault. As in the male, if the ovum is perfectly formed, the transportation may be at fault. If a history is obtained of peritonitis, abortion or ectopic gestation, a pregnancy followed by fever and inflammation, adhesions may be present around the ovary, cutting off the blood supply and causing a cystic condition which precludes the possibility of ovulation.

Then again, the covering of the ovary may be so thick that it is impossible for the Graafian follicle to break through. The history of menstruation is to be gone into—whether it occurs once in twenty-eight days or once in two or three months. If menstruation is not normal and is diminished in character and duration, stimulation by animal extracts is indicated. Bimanual examination is made of the uterus tubes and ovaries. Note the size of the uterus, presence of tumors or other malformations and displacements. These conditions I will leave to the domain of the gynecologist. The cervix may be the seat of cervical catarrh and contain a thick tenacious discharge which will entangle the spermatozoa in its meshes, proving a positive barrier. The next step in the examination is the condom specimen of semen brought by the husband. If no spermatozoa are found, then he is sterile. To be sure of this, I always advise the examination of several specimens; also, aspiration of semen from the testicle by a hypodermic syringe and the examination of same for the presence of spermatozoa.

If the semen in the condom specimen contains spermatozoa, estimate the number present, the motility, and see if they are dead or alive. If dead, we must determine whether they were killed inside or outside of the body. If their tails are curled, they died within the body; if their tails are straight, they died outside the body. The presence or absence of crystals is next to be looked for; the more crystals present, the less chance of finding spermatozoa present. Finding nothing but crystals makes the case hopeless.

TREATMENT.

The treatment in a case where no spermatozoa are present would consist in stimulating the spermatogenic power of the testicle. This can be done alone, or in combination with other extracts, depending upon the type that the patient can be classed as from an endocrine viewpoint.

If the aspirated fluid from the testicle shows spermatozoa and the condom specimen shows none, then we know we are dealing with an obstruction in the vas deferens or at the epididymis. This calls for an operative procedure.

If the condom specimen shows the presence of spermatozoa, and the organs of the wife upon bimanual examination reveal no gross pathological changes, it is important to examine for spermatozoa *in situ*. This is done in order to determine the reaction between the spermatozoa of the man and the cervical, vaginal and uterine secretions of the woman. The wife must be examined for his spermatozoa in order to learn if the woman is doing her share of the mechanism of the act, if the semen is being deposited in the proper place, and if her genital organs are harmful or beneficial to the spermatozoa.

The couple are instructed to have intercourse a few days after the examination of the condom specimen. They are also instructed not to use a condom. After the completion of the act, the wife should remain on her back for one hour. After two hours have elapsed, the wife presents herself at the office for the examination of the spermatozoa *in situ*.

She is placed on the examining table and smears are taken from the following places: The vaginal outlet and the vulva; the posterior cul de sac; the region of the cervical os, and the cervical canal.

Let us now interpret some of the findings. If dead straight tailed spermatozoa are only found at the vaginal outlet and the vulva and none are found at the posterior cul de sac, cervical os or cervical canal, we know that the husband is the cause of the sterility, due to the premature ejaculation. Treatment consists of finding the local pathological condition of the genitourinary tract present in the husband, massage of the prostate, treatment of the verum montanum, general dietetic treatment and internal secretions depending upon the type.

If dead, straight tailed spermatozoa are found at the vaginal outlet and vulva and posterior cul de sac, and not in the cervical region or cervical canal, it means that the husband is depositing the sperm in the proper place, but, due to some faulty construction of the female parts or faulty posture of the acts, the sperm did not reach the region of the cervical os or cervical canal. Correct the posture of the woman and also the faulty position of the cervix.

If live spermatozoa are found in the region of the cervical os and none are found in the cervical canal, this shows that the cervical plug is not functionating properly so as to withdraw the semen into the cervical canal. If live spermatozoa are found in the cervical canal, then it is a proved fact that the trouble lies higher up in the uterus tubes or ovary.

The question of acidity or alkalinity of the vaginal secretion must be looked into. The vaginal secretion is tested as to its acidity or alkalinity, and a note made of its result. After coitus, the reaction of the vaginal secretion is tested again and notation made of the effect on the activity of the spermatozoa. Extreme cases of hyperacidity may kill the spermatozoa too quickly. Neutralization of the vaginal secretion is necessary. To overcome the acidity of the vaginal secretion, alkaline douches are prescribed. These douches are to be taken before the commencement of the sexual act.

THE ENDOCRINES.

Endocrines play an important part in the treatment of sterility. In cases where menstruation occurs only once in three or four months, we are generally dealing with a condition where the endocrines which stimulate this function and ovulation are not assertive enough. Undoubtedly the thyroid gland controls the ovarian functions. Its hormone encourages menstruation and a condition of hypothyroid commonly causes a lack of sexual development.

Pituitary insufficiency is the cause of many abnormalities of sex development. The external genitals are small, and infantile uterus may be present. The menses appear late or not at all, and if the amenorrhea is not complete, the flow is scanty and irregular.

The ovaries produce at least two distinct internal secretions: one from the corpora lutea and the other from the interstitial cells. The luteal hormone is chiefly concerned with the determination and the production of menstruation and the growth of the sexual organs.

A study of the male and female, according to the methods outlined above, and an accurate diagnosis of the condition at fault, are necessary before rational treatment may be administered, either by the modern application of our knowledge of endocrine therapy, or by corrective surgical and medical procedure.

CONCLUSIONS.

1. Always examine the husband before the wife is put under treatment.
2. The husband may be potent but sterile.
3. Condom specimens for examination are not to be omitted.
4. Examination of sperm *in situ*.
5. The use of endocrines is indicated according to the type of the patient.

320 Second Avenue.

Pharmacological Action of Salvarsan.—D. E. Jackson and G. Rapp (*Journal of Laboratory and Clinical Medicine,* October, 1920) report experiments to determine whether or not any true bronchial asthmatic action is produced by injections of arsphenamine. The experiments show that no dangerous bronchoconstriction is to be feared with the proper use of first class preparations of arsphenamine. The action of salvarsan on the pulmonary pressure was studied, and it is believed that even the smallest injection of salvarsan exercises some immediate action on the pulmonary pressure. When this has been greatly raised by salvarsan, injections of adrenaline tend to lower the pressure and to restore the excursions of the pulmonary pressure due to the respiratory movements of the lungs, when these had been previously greatly reduced by the salvarsan. When solutions of salvarsan are injected into the general circulation by way of the femoral artery the pulmonary blood pressure is still raised by the drug, though less than when injection is into the femoral vein. Solutions of salvarsan which are injected into the portal vein and are thus carried through the liver before passing into the general circulation, produce little if any effect on pulmonary pressure. This action of the liver is believed to be due to a precipitation of the drug in the capillaries and arterioles of the liver, which apparently does not correspond to the ordinary detoxicating action of the liver as manifested on many poisons.

Considerations Regarding Prostatectomy.—J. T. Gerachty (*Southern Medical Journal,* January, 1921, says that in the average case, whether one or the other operation is selected, makes no essential difference, the operator usually performing the operation with which he is most familiar. There are, however, certain indications which should lead to the selection of one or the other operation:

When a suprapubic cystostomy has been recently performed for drainage, the enucleation usually should be carried out through the suprapubic opening. A previous perineal operation, or the presence of dense scar about the bulbous of membranous urethra. Multiple small calculi, especially when associated with diverticula. Where prostatic hypertrophy is complicated with a lesion of the spinal cord the danger of incontinence following prostatectomy will be very considerably lessened by suprapubic removal. Where there is present a very large intravesical hypertrophy with great dilation of the internal sphincter, suprapubic prostatectomy will be given better functional results. In this type of case, frequently following perineal prostatectomy, there is a slight weakness of the sphincters with consequent annoying dribbling, which may persist for some months. In the vast majority of these cases, however, the incontinence, which is only slight, disappears. Where no special indications exist for the perineal operation the suprapubic should be the method of choice. Where it is impossible, because of ankylosis of the spine and hip to put the patient in the proper perineal position. In every old and feeble man, perineal prostatectomy seems to me to be preferred. This operation is attended with considerably less shock than the suprapubic operation which inherently causes greater disturbances than the perineal. Small fibrous prostates should be removed perineally, as successful removal through the suprapubic route may be very difficult or almost impossible.

Patients with a great deal of abdominal fat should be selected for the perineal operation rather than the suprapubic, because the fat does not resist infection well, and convalescence consequently may be protracted. Where there is present a very large inguinal hernia, the perineal operation seems definitely indicated. Where there is present a localized area suspicious of carcinoma, better exposure of the involved part will be secured through the perineum, because cancer of the prostate nearly always occurs in the posterior lobe. In occasional cases it will be possible to excise completely the carcinoma without doing a complete radical operation. It is impossible, by the suprapubic route, to remove carcinoma involving the posterior lobe. Repeated previous suprapubic operations are an indication for the opposite route.

Diagnosis of Primary Syphilis.—Henry D. Lloyd (*Boston Medical and Surgical Journal,* November 4, 1920) says that one of the most important factors, if not the most important, in the successful diagnosis of primary syphilis is a lesion which has not been treated either with silver nitrate or some form of mercury. In a series of ninety-seven consecutive cases a positive diagnosis was made in ninety-six per cent. by means of the darkfield microscope. In a number of these, repeated examinations were necessary. The positivity of the Wassermann test averages about thirty to thirty-five per cent. at the end of ten days and increases to practially one hundred per cent. at the end of the fifth week after the appearance of the chancre. By employing careful clinical observation and both laboratory methods of examination, repeatedly if necessary, but few cases of primary syphilis should go unrecognized.

Experimental Syphilis in the Rabbit.—Brown and Pearch (*Journal of Experimental Medicine,* November, 1920) found that characteristic lesions were distributed with about equal frequency between the nose and lacrimal system and the eyelids on the one hand, and the genital and anal regions on the other. Lesions of mucous membranes and mucocutaneous borders developed at periods of time varying from a few weeks to several months after inoculation. Most of them lasted rather a long time, in several instances in an active condition for considerably more than a year. The lesions are described in detail.

Prostatic Obstruction.—Arthur H. Crosbis (*Boston Medical and Surgical Journal,* September 30, 1920) says:

1. Make absolutely sure that you are dealing with obstruction at the bladder outlet.

2. Having made sure of that, drain the bladder either by catheter or by suprapubic tube until the kidneys have reached their highest possible efficiency. Fight renal insufficiency.

3. Remove the obstruction.

4. Fight renal insufficiency.

Acriflavine Treatment of Gonorrhea.—Lewis T. Mann (*Medical Record,* January 22, 1921) states that the increasing use of this agent since its introduction by Davis and Harrel in 1918 merits attention. It is highly gonococcicidal, inhibiting growth in a dilution of 1:300,000, or 600 times as strong as protargol. Its penetrating powers are very great, extending into the muscular layers, and when used for irrigation in a 1:4000 strength it is bland and nonirritating. This solution is used once a day in a saline solution at body temperature, even in cases where there is considerable painful inflammation. Except for the drinking of ten to twelve glasses of water daily, this constitutes the entire treatment. If, during the treatment, the posterior urine becomes cloudy, intravesical lavage is used immediately; in a subacute or chronic posterior urethritis with prostatitis, if there be no epididymitis, daily intravesical irrigations may be used at once, and the prostate massaged on the injected bladder twice or three times a week. Watson found that, of 222 cases in the British Army, 198 averaged fifteen and four tenths days for cure. Mann reports thirty-six cases so treated, of which twenty-one were acute anterior cases with an average time of cure of thirteen days. He concludes by saying that acriflavine in a 1:4000 strength in saline solution is the best treatment we have today for the irrigation treatment of gonorrhea.

Treatment of Carcinoma of the Prostate.—H. C. Bumpus (*Surgery, Gynecology and Obstetrics,* January, 1921) states that:

1. Metastasis to the glands probably occurs more frequently in cases of carcinoma of the prostate than is demonstrable clinically because of the inaccessibility of the glands first involved.

2. Two distinct types of carcinoma of the prostate are distinguishable clinically and microscopically.

3. The smaller type of carcinoma of the prostate gives clinical and microscopic evidence of greater malignancy.

4. The larger type of carcinoma of the prostate tends to remain localized, resulting in more urinary symptoms, and producing metastasis later in the disease than the smaller clinical type.

5. The larger clinical type of carcinoma of the prostate is more amenable to radium therapy because of its lesser potentiality of malignancy.

6. One third of the patients with carcinoma of the prostate have osseous metastasis demonstrable by the röntgen ray.

7. The pelvis and spine are the most frequent sites of osseous metastasis.

8. Metastasis occurs rarely in the lungs, probably never without involvement elsewhere.

9. Metastasis to the spinal cord from carcinoma of the prostate closely simulates primary cord tumors and often occurs when the prostate is but slightly enlarged.

10. Pain is absent in a fourth of all cases with metastasis.

11. Urinary symptoms are absent in 11.5 per cent. of all cases with metastasis.

12. Neuralgic and rheumatic pains in men above middle age, even in the absence of urinary symptoms, should suggest the possibility of carcinoma of the prostate.

Surgical Treatment of Ulcer.—John J. Gilbride (*American Journal of Electrotherapeutics and Radiology,* December, 1920) states that one cannot apply a routine treatment for all cases of gastric or duodenal ulcers. The operator is guided in applying the type of operation suitable for the individual patient. The operation of gastroenterostomy for ulcer of the stomach gives best results when the ulcer is located near or at the pylorus or when the emptying of the stomach is interfered with. Excision of the ulcer should be carried out if this is practicable from its size and position. A decision must be made as to whether an ulcer is malignant or benign so as not to perform a needless pylorectomy or partial gastrectomy for the removal of a benign lesion.

Ulcers of the lesser curvature of the stomach situated at a distance from the pylorus when they are not too large had better be excised and a gastroenterostomy performed. In the presence of very large ulcers, when extensive adhesions to surrounding viscera are present the ulcer should be left alone and only a gastroenterostomy performed; in patients with extensive lesions of the stomach the performance of an additional jejunostomy may be advisable.

Anterior gastroenterostomy is performed only in those cases where it is not possible to do the posterior operation. But as gastroenterostomy is not a physiological procedure surgeons are performing operations on the pylorus or employing one of the methods of gastroduodenostomy whenever possible, as experience has shown that in not a few cases in which gastroenterostomy had been performed it later became necessary to reoperate to separate the jejunum from the stomach and reestablish the gastroduodenal route.

Ulcers of the duodenum when suitably located may be excised or invaginated. In those cases where there is severe bleeding, I believe when possible those vessels that are accountable for the bleeding should be ligated. Crippling adhesion or other complications even in healed ulcers of both the stomach and of the duodenal which continue to cause symptoms require operation as will ulcers which have been medically treated and the ulcer has healed but it has not remained healed.

Administration of Digitalis to Children with Diphtheria.—Hugh McCulloch (*Southern Medical Journal,* February, 1921) says that diphtheria toxin, either experimentally or clinically, produces anatomical and functional changes in the structures of the heart by direct action. Clinical manifestations of cardiac failure are due to these alterations of function and not to changes in the vagus centre or nerve. The effect of diphtheria toxin on the heart is similar in many ways to the effect on the heart of digitalis, either directly or through the vagus nerve. The administration of digitalis to patients with diphtheria is contraindicated because there would result a summation of effects in the same heart. With our limited means of estimating the optimum therapeutic amount of digitalis, or of controlling its effect on the various structures of the heart, this summation constitutes a real danger to the life of the patient. Measures for providing rest for the heart should be adopted.

Radium in Benign Conditions of the Uterus.—R. L. Payne (*Virgina Medical Monthly*, February, 1921) warns against the application of radium under the following circumstances: When tumors are larger than a three to five months' pregnant uterus; in young women with single, subserous myomata, which may be removed by myomectomy; cases in which the myoma is complicated by a definite chronic inflammation. Radium in small doses is always used, on the other hand, in young women with excessive menses incident to myopathic changes in the uterus, in excessive functional activity of the ovaries associated with small myomata, in submucous fibroids, in polypoid endometritis, and particularly in the treatment of leucorrhea. In hypertrophic endometritis with excessive leucorrheal discharge small doses of radium gave excellent results in every case, but the leucorrhea due to endocervicitis following chronic infection of the glands is a more important indication for radium, since this condition often underlies the cause of sterility in young women.

Small doses applied in the cervical canal as high as the internal os generally relieve this type of leucorrhea and produce a more or less healthy condition of the cervical canal. Larger doses of radium are used by the author in women over forty years of age suffering with myopathic hemorrhage or menorrhagia from myoma. In such cases one is practically certain of not only bringing on the menopause but also completely and permanently arresting all hemorrhage and discharge. In the benign conditions of the uterus radium causes immediate cessation of the periods in about forty per cent. of cases; in about eighty per cent. of cases there is one period, and in about twenty-three per cent. of cases two or more periods some months afterward; in about fifteen per cent. of cases there is a return to normal with regular periods. In about five per cent. of the cases in which immediate cessation of bleeding occurred there was a return of bleeding after about one year, which was readily controlled by a second dose of radium. There is profuse leucorrhea after large doses in about nineteen per cent. of cases, and slight leucorrhea persisting for six to eight weeks in about twenty-six per cent. of cases.

A New Method of Therapeutic Intratracheal Injection.—A. Balvay (*Paris médical*, January 29, 1921) describes a specially curved cannula which is readily introduced beyond the epiglottis and the direction of the orifice of which is such that the fluid to be injected fills the funnel like cavity formed by the larynx and epiglottis, and passes completely into the trachea when the patient makes an inspiratory movement. The angle of the curve of the cannula is smaller than forty-five degrees, so that once the cannula is passed beyond the epiglottis, its extremity naturally falls into the vicinity of the vocal cords. The patient holds his tongue out with his thumb and forefinger and takes a few deep inspirations at the start, after which one mil of fluid is injected to get him accustomed to the procedure. He is warned not to swallow after the fluid is introduced, but to breathe in deeply. The cannula is introduced with its curved portion horizontal until beyond the epiglottis, then turned until it is vertical, and the therapeutic dose of fluid—two to three mils—rather rapidly injected. The patient now breathes in four or five times, and is told to expectorate gently without swallowing, and to pay no attention to the slight fit of coughing which follows the injection.

Very soon after the first sitting the patient is able to draw in the entire contents of the syringe with a single inspiration. No difficulty was found to attend the procedure in over 100,000 injections, including prolonged experience with it in a hospital for consumptives during the war. The best vehicle for drugs to be injected is vegetable oil, although vaccines, serums, and even watery drug solutions have also been injected. If more than two or three mils of fluid are to be injected, they must be given in divided amounts at intervals of five or ten minutes; otherwise there will be a tendency for the fluid to overflow the larynx and be swallowed. Passage of the fluid into a single lung can be secured by having the patient incline the chest on that side for a few minutes and carry out deep inspirations. Evidence is presented to show that the fluid injected passes down directly into the air vesicles. Metallic mercury, injected in the same manner in a rabbit, was found to have become diffused in both lungs.

Ureteral Calculi.—A. J. Crowell and Raymond Thompson (*Southern Medical Journal*, February, 1921) assert that practically all recently impacted ureteral calculi can be removed under local ureteral anesthesia by cystoscopic methods with less fatalities and less injury to the kidney function than is obtained by surgical operative procedures. The success of the method depends upon complete ureteral anesthesia and dilatation, the skill of the operator, and persistence in his manipulations. An effort should first be made to remove the stone by this method, since no harm is done the patient by it and surgery can be resorted to at any time necessary. If crowned with success, the fatalities are far less, much time and suffering are saved, and a return of the condition is less liable.

Repair of the Humerus by Means of the Bone Graft.—M. S. Henderson (*Southern Medical Journal*, February, 1921) has for several years taken a very large graft from the flat internal surface of the tibia and applied it to the fragments after their periosteum has been removed and the outer portion of the cortex until the cancellous or endosteal layer is exposed. Against this layer, which has strong bone forming properties, is placed the endosteal surface of the graft. Two or more beef bone screws are placed through the graft into each fragment, the screws going through the opposite cortex. In this manner a much larger graft than the intramedullary or inlay grafts can be used. The chief advantage is that the bone producing elements in the graft and in the fragment are in contact over a very large area. It is his belief that a large part at least of this graft maintains its vitality and becomes one with the fragments. This belief is based entirely on clinical experience. Union is brought about much more rapidly than with other grafts, and the röntgenogram shows early union of the graft to the fragments.

Proceedings of Societies

NEW YORK NEUROLOGICAL SOCIETY.

The Three Hundred and Eighty-fifth Regular Meeting, Held at the Academy of Medicine, January 4, 1921.

The President, Dr. WALTER TIMME, in the Chair.

Encephalitis Lethargica with Unusual Ocular Symptoms.—Dr. B. ONUF presented a case seen by him in his consulting service at Ellis Island, and diagnosed as lethargic encephalitis with resulting bilateral ophthalmoplegia and a slight titubation of gait, besides some muscular disturbances of which latter he expressed some doubt whether they were the result of the encephalitis or due to a juvenile muscular dystrophy. The data of anamnesis are somewhat meagre, as the patient, Nicola De Filippi, an Italian boy of fifteen, could not give any reliable data of family history nor of personal history preceding his last illness, and Dr. Onuf had no opportunity of questioning his relatives. The development of the illness which led to his present ophthalmoplegia, the patient himself briefly described as follows: While coming from Italy to the United States, and three days before the arrival of the ship in New York Harbor, he was taken with headache and what he calls weakness of the lower extremities, being unable to stand and walk without support, and for these three days, i. e., until December 19, 1920, he wanted to sleep, day and night. He had also loss of appetite, but allegedly no fever. On December 22, 1920, he was admitted to the Immigrant Hospital on Ellis Island, where Dr. Faulkner and Dr. Doran recognized the ophthalmoplegia and swaying gait, and referred the case to the speaker for further neurological examination and opinion. The patient on admission showed a slight elevation of temperature, as evidenced by the chart exhibited at the meeting. Neurological examination, December 24, 1920: Patient presents an ophthalmoplegia of both eyes. Eyeballs appear quite immobile. Only when patient looks into mirror there is a slight convergent movement of both eyes, the right eye also moving slightly outward when following the mirror to the right side, while in the left eye only the convergent movement is noticed. There is a slight ptosis of left side, but none on the right. Pupils show slight inequality—left is smaller than the right. Some light response present in both eyes, but decidedly diminished in extent. Accommodative response practically absent. Consensual reaction present in right eye, but diminished, and still more diminished in left eye. No distinct asymmetry of facial innervation, but occasional twitchings on either side, more of the character of choreic tic than peripheral twitchings. Tongue is put out straight and shows no atrophy. Speech of somewhat nasal character and lacks a little in distinctness. Gait swaying, with no preference to one side. Romberg slight. Cannot walk on a straight line on floor, heel to toe. Knee jerks, ankle jerks, wrist jerks, absent. Epigastric reflex present on both sides, fairly lively. Cremasteric, very slight on both sides. Plantar reflex, flexion of small toe and the one next to it on either side. Motor power of upper extremities: well preserved but slight deviation in index to index pointing test with eyes closed, also to index to nose pointing test. Slight adiodokinesis. Touch, pain and localization, preserved everywhere. No areas of hyperalgesia. Slight degree of winged scapulæ and lordosis which disappears on sitting down. No pronounced atrophy of any group of muscles except perhaps scapular muscles, but there is a poor muscular development in general. Mental condition: Patient appears serious, perhaps slightly depressed, but prompt and to the point in all his answers to sensory tests. Promptly gives day of week, month, and day of month. Says this is a hospital. Says he came here two days ago (correct). Is intelligent. Cooperates well. Eye grounds: Not seen by an ophthalmologist, but the speaker's own examination revealed absence of optic neuritis, but the discs were perhaps slightly grayer on temporal side. December 27, 1920, x ray examination of head by Dr. T. B. G. Anderson. Findings reported: Sella turcica does not show up in either of two plates taken. December 28, 1920. About 12 c. c. of cerebrospinal fluid withdrawn by lumbar puncture. Fluid clear and under normal pressure. Examination by Dr. R. P. Sandidge shows: cell count 4 cells per c. mm.; globulin slightly positive; Wassermann negative. December 30, 1920, Wassermann of blood (Dr. R. P. Sandidge) reported negative. December 30, 1920: Examination of urine; amber in color; acid; specific gravity 1025; no albumin; no sugar. January 4, 1921: Blood count, by Dr. J. P. Paulonis: Red blood cells, 4,800,000; white blood cells, 7,800; polynuclear, seventy-one per cent.; small mononuclear, twenty-three per cent.; large mononuclear, four per cent.; eosinophiles, two per cent.; hemoglobin, ninety-five per cent.

In conclusion, Dr. Onuf expressed his gratitude to the medical staff of Ellis Island for the help given in working up this case and for the privilege of its presentation to the society.

Dr. I. ABRAHAMSON said that at present he knew of no lethargic encephalitis, except chronic and remitting cases. Poliomyelitis and polioencephalitis were in existence, presenting certain features of polioencephalitis, but belonging to the group of poliomyelitis. Severe and very complete ophthalmoplagias were unusual in lethargic encephalitis. The loss of knee jerks might be either of spinal origin or from a lesion in Deiter's nucleus. The history of unsteady gait would indicate that the case might fit into the latter category. He had lately seen patients in whom there had been lethargy and diplopia, and finally total focal paralysis, which he regarded as polioencephalitis.

Dr. WALTER TIMME said that there had been a recrudescence early in December of lethargic encephalitis. In the case presented, the number of cells was small for poliomyelitis.

Dr. Onuf stated that he had thought of poliomyelitis, but the history of the lethargic condition decided him in favor of encephalitis. The patient had been taken ill on the boat coming from Italy, which might make a difference in the possibility of the affection being lethargic encephalitis.

Dyspituitarism with Hypertension.—Dr. E. David Friedman presented the case of a student, aged nineteen, who for nine years had show dwarfism and obesity, hypertension, and recently recurrent pains in the region of the spine. The lad is the third of seven children. The parents and one sister are short and stout. One brother suffers from *petit mal*. The patient's personal history includes measles and scarlet fever, but it is not known whether the patient's kidneys were involved at that time or not. The birth was normal and development normal up to the age of nine years, when he began to grow stout. Their has been little gain in height since then. His abdomen became pendulous, his fingers stubby, feet remained small and his face became ruddy. Thyroid extract was administered in 1915 for over a year, and he grew two inches in height. The treatment was then stopped. The patient felt well and went to college. About six months ago he complained of shooting pains in the region of the spine and chest. Examination of the urine showed "kidney involvement." He now has shortness of breath and palpitation of the heart after exertion. Speech is somewhat hesitant, and some impairment of memory has made itself apparent. Dimness of vision has been reported during the last two months, and occasional headaches. There is nocturia and no polydipsia.

The physical examination reveals a short, obese individual, 136½ cm. in height (normal for his age, 175 cm.); the weight is 46.4 K. There is erythema of the face and a pendulous distended abdomen. The teeth are somewhat spaced, the approximation poor, the lateral incisors projecting at a marked angle. Pupils are normal and fields also normal. No sclerotic changes of the vessels of the fundus are reported. There were two pinpoint hemorrhages in the left fundus at one time. The thyroid is not enlarged. Examination of the lungs was negative; the heart is somewhat enlarged to the left and the aortic second sound accentuated. Blood pressure is increased to 198/110. The genitals are small. There is an overgrowth of hair at the bridge of the nose, and the body is covered with fine lanugo hair. The only pathological neurologic findings are the slightly diminished deep reflexes, which may possibly be accounted for by the existent glycosuria and hyperglycemia. Other laboratory findings were normal. There is perforation in the septum of the nose and the tonsils are moderately enlarged. The skin is very dry and presents three distinct peculiarities: ringworm in the axilla and pubis, erythema and telangiectasis of the face, and striæ distenseæ of the abdomen. X ray examination showed undeveloped sinuses, the left being opaque. The lower molars were unerupted and impacted. The examination of the skull showed a normal sella. Posterior clinoids as well as the bones of the body of sphenoid bones markedly atrophic and thin. A dense shadow is seen in the middle fossa, and a shadow at the root of the neck, extending up from the aorta and probably due to the large vessels, is also seen. The x ray of the hands showed bony development such as is usually seen in an individual of thirteen. Epiphyseal lines are still present. Libido was absent. Urine showed glycosuria. Electrocardiogram showed a left ventricular preponderance, tachycardia, sinus arrhythmia. There was slowing up of rate on holding the breath and after vagus pressure. A slight alteration of the size and shape of the pulse wave revealed instability of the cardiac pacemaker. There was an unstable vagus and sympathetic balance. Intramuscular injection of atropin and pilocarpin produced no striking results. Adrenalin was not tried due to high blood pressure. The conjunctival adrenalin test of Loewi was negative. The title for the presentation was chosen to indicate the predominating features, but other glands are involved as well. The stunted growth points to a deficiency of the morphogenetic principle of the anterior lobe of the pituitary. The glycosuria and the hypertension might be interpreted as hyperactivity of the posterior lobe. (The absence of a pathological blood chemistry, aside from the increased blood sugar and the presence of a normal phthalein output, would seem to exclude true interstitial nephritis.) The hypertrichosis, the increased cholesterin content of the blood, indicate some involvement of the adrenals. The dry skin and delayed ossification of the bones show that the thyroid is not funcionating normally. Reichmann, in the *Deutsches Archiv für klinische Medizin* (Vol. 130—Heft 3 and 4), has designated a new pituitary syndrome, differing from the two characteristic types hitherto described, hyperpituitarism producing acromegaly and hypopituitarism causing dystrophy adiposogenitalis of Froelich. Reichmann's case resembles ours very much, with the exception that his patient showed exophthalmos and bradycardia instead of tachycardia seen in this case.

Juvenile Tabes.—Dr. Charles Rosenheck sketched the development of the recognition of juvenile tabes as a distinct clinical entity, from the day when Remak first reported three cases in 1885, and cited a discussion ten years earlier at a meeting of the *Berliner medizinisch psychologische Gesellschaft,* where Henoch reported the fact that he had seen tabetic symptoms in a six year old child. The discussion on this occasion brought out the fact that others had also seen such cases. O. Marburg made the next important contribution in 1903 with cases observed at the Fuchs Eye Clinic, and cited thirty-four cases from literature. The Frenchman, Cantonnet, an ophthalmologist, has given the greatest contributions on the subject, and Dr. Rosenheck considered it particularly interesting to note that the first reported cases, those of Remak, were also from an eye clinic.

The difference between juvenile tabes and Friedreich's hereditary ataxia was not always apparent to earlier observers, and Hildebrandt first called attention to the error, drawing the distinction between such cases and those that might be considered true juvenile tabes. The diffidence of observers in accepting juvenile tabes as a true clinical entity is thought to have been due to the fact that up to 1910 no autopsy had been recorded to prove the existence of such a disease process.

The various factors that create the syndrome in the young and the respects in which it differs from the accepted orthodox type as observed in the adult are as follows: The average of incidence is placed at fifteen years. Mingazzini and Baschieri-Salvadori report an onset at three years of age as the youngest recorded case. Hereditary lues is responsible for the development of tabes in the young in the majority of cases. A few cases of infection in infancy are reported. According to Cantonnet's analysis nearly twice as many females as males are affected, a striking reversal of conditions pertaining in later life.

The mode of onset in a large number of cases was an early visual difficulty rapidly proceeding to optic atrophy and blindness. The percentage of this form of onset is much higher than in adults. Lancinating pains come next in order of frequency, twenty-five per cent. of the patients showing these as compared to seventy per cent. of adult patients. Bladder disturbances and gait defects were observed in fewer cases. Cantonnet remarks that ataxia in juvenile tabes is conspicuous by its absence, and the absence of marked gait disturbances in the tabetic blind has been commented on by all writers on the subject. Crises and girdle like pains have not been observed at any time, nor have trophic phenomena been reported.

Thorough neurological study renders the diagnosis a matter of simplicity. Stephenson says a diagnosis of tabes should be made in the young who present evidences of amblyopia and optic atrophy. Cerebrospinal lues and Friedreich's ataxia are the only affections that simulate it to any serious degree. Scoliosis, foot deformity, pyramidal signs, nystagmus speech defects, etc., are never found in tabes, however; and the syndrome of cerebrospinal lues is somewhat different.

A patient, a young woman, eighteen years of age, was next presented. She is the second of five living, healthy children. The patient says that she did not have the usual diseases of childhood, nor any illness in recent years. She finished a complete high school course successfully. Pupillary inequality was observed at the age of twelve by a school physician, and she was advised to wear glasses. The first subjective disturbances appeared at the age of fifteen, and took the form of severe lancinating pains. This was the only symptom for two years. Paresthesias, variable in character but always affecting the lower extremities, principally the toes, have been noted in the past year. There have been no visual difficulties during the period of the development of the malady. Examination of the patient shows no abnormal attitudes of the voluntary motor system. The gait is somewhat disturbed by an ataxia which varies. In general, all coordinative activity is performed in a fairly creditable manner.

Skilled test acts showed no gross defects. Deep reflexes are completely abolished; superficial reflexes are present and equal. No pathological reflex could be elicited. The peripheral neural apparatus shows no pathological alteration nor impairment. Examination of the cranial nerves shows the pupils fairly regular, markedly unequal, and not responsive to light. Accommodative and consensual reactions are likewise abolished. The fundi showed a narrowing of the larger vessels and indistinctness of the smaller ones; the disc is grayish and shows clear evidence of early atrophy. Systemic examination shows general deficiency in growth and development. Hutchinsonian teeth are present. Laboratory examination showed a positive blood Wassermann. Spinal fluid showed 130 cells per c. mm., increased globulin, Lange colloidal gold reaction, 5544334555, in addition to the positive Wassermann. The prognosis in general, Dr. Rosenheck said, after summarizing the main conclusions reached, is excellent for life but extremely poor for vision.

Dr. ABRAHAMSON said that it would be interesting to study the endocrinous glands in the patient's family, to try to determine why one child was affected and the others spared.

Dr. TIMME remarked that the girl showed numerous glandular disturbances, and the teeth especially were very small.

Alcoholic and Syphilitic Psychoses. — Dr. GEORGE H. KIRBY drew attention to the fact that until recently one often encountered the statement that alcohol and syphilis together were responsible for from one quarter to one third of all cases of mental disease that required hospital treatment. During the past decade there have been certain developments which must exercise a great influence on the prevalence and potency of these two important causes of mental disorder.

There can be little doubt that during recent years there has been a general movement against the intemperate use of alcohol. The Federal prohibition amendment is but one indication of this movement. A striking reflection of this trend against inebriety is seen in the admission rate to the Bellevue Hospital alcoholic wards for the past eleven years. During this period the total number of cases of acute or chronic alcoholism (exclusive of the psychotic types) totalled 75,333.

The high point, according to the report, was in 1919, when nearly thirty-two per cent. of all admissions to Bellevue Hospital were diagnosed as cases of alcoholism. Since then there has been a persistent decrease, the low point being reached in 1918, when a little over six per cent. of the cases were diagnosed as alcoholism. A slight upward turn of the curve in 1919 was due to a relative falling off of the general admissions to the hospital. The actual number of alcoholic cases in 1919 was less than in 1918. The figures for 1920 are not yet available, but preliminary estimates show a smaller number of cases than in 1919.

Dr. Kirby regarded the continous decline in the ratio of alcoholic cases as all the more significant when one takes into consideration the increasing population of New York City and the fact that there has been apparently no important shifting of alcoholics to other hospitals or institutions for treatment.

The percentage distribution of alcoholic psychoses admitted to all of the New York State Hospitals also shows a decline for the past twelve years. A marked fall has occurred from the high point in 1908, (when nearly 11 per cent. of the State Hospitals' admissions were diagnosed alcoholic psychoses), to less than 2 per cent. in 1920. It was thought that the diminishing number of alcoholic psychoses reported might be accounted for in part by a change in diagnostic attitude; but the separate listing of the Korsakoff cases, which presents little room for diagnostic error, gave a curve which showed a decline similar to that for the other psychotic types.

Consciousness in the Epileptic Fit.—Dr. L. PIERCE CLARK said that the ordinary definition of the epileptic fit is a loss of consciousness attended with or without a convulsion. This accepted loss of consciousness Dr. Clark finds from patient's reports, to be questionable. One patient states: "When a *petit mal* occurs, I can usually control myself and go on talking or continue whatever I am doing . . . There is a sort of turmoil in my mind. This would last only a second . . ." Another says: "I feel intensely aware of myself . ." A third patient reports: "During the confused spell I have a feeling that I must not let anyone know there is anything unusual, and that I must retain my poise at all costs . . Consciousness so far as outside affairs are concerned is suspended and my attention is directly turned in upon myself." Another patient says: "I could always control these attacks if I really wanted to, but I let them come up. It was a gratification, I think, to something inside me . . ."

From these statements, Dr. Clark infers that instead of there being a loss of consciousness in totality, the subject consciousness is increased. *Awareness of surroundings* may be greatly or entirely lost, but there is in its place heightened *awareness of self*. In more severe epileptic reactions the individual may not be able to report his subject awareness; but from his appearance and manner it is apparent that he is in a state like that experienced by individuals able to record twilight states. Still more complete submergence of self to a condition resembling that of birth or earliest infancy is met with in deeper grades of disordered consciousness. The patient may answer questions and will always answer in disjointed sentences in the optative mood, such as "I am trying to," "I'd like to," etc.

The state of epileptic reaction, then, said Dr. Clark, is an involution of the normal development of consciousness. This latter is gradually evolved out of egoconsciousness to a rich combination of subject and object consciousness or to a unified composition of both. The epileptic reaction then has a enormous psychic importance, principally in the deteriorating influence upon the power of sustained interest and attention, and the orderliness of normal objective life. Each attack refreshes and satisfies the patient's cruder egoconsciousness and enriches his egoistic interest. It is therefore to be expected that he will not be interested in recovering from his disorder and in foregoing his unconscious self gratification. To appeal to him, his personal satisfactions in every day life must be increased beyond those obtained from his habit.

Letters to the Editors.

POSTGRADUATE MEDICAL INSTRUCTION.

NEW YORK, *April 2, 1921.*

To the Editor:

Dr. Satterthwaite's recent interesting address on beginnings of postgraduate medical instruction in New York city reminded me of still earlier teaching along this line, which I mentioned at the time, and which I hope I may be pardoned for recording, as it is so personal.

In 1870, on returning from Europe, after having been much with Hebra, Newman, and Kaposi, and observing their methods of postgraduate teaching of dermatology in Vienna, I at once wanted to install some such method in New York.

As I could get no dispensary skin clinic, I took that for general medicine, in Demilt Dispensary, waiting for a vacancy in the line of diseases of the skin. This occurred two or three years later, and almost immediately I announced that I would take a few doctors, six at a time, who wished to study dermatology, and would show them patients and talk about them, and I remember that Dr. Mary Putnam Jacobi was one of the earliest, and that she attended very faithfully and asked many questions. I had cards printed, good for a six weeks' course, for which I made a moderate charge, and the money received was put into colored plates from various atlases and photographs, for teaching. These I added to as I was able, and now at the New York Skin and Cancer Hospital is my collection of many thousand plates and photographs, all mounted and varnished. Later I bought models or casts from Baretta, of the Hôpital St. Louis, Paris, and added to them from time to time, so that there is now a good collection at the hospital, all representing a cost value of from $3,000 to $5,000, illustrating dermatology and syphilis.

The number of those desiring postgraduate instruction in dermatology increased so much that in a year or so I secured a room in the Demilt Dispensary, which held about forty, and for a few years gave free courses to practitioners, until the opening of the outpatient department of the New York Hospital, where a larger room was given me, in which I gave free lectures to a hundred or so on Wednesday afternoons for many years, until I transferred them to the new building of the Skin and Cancer Hospital.

Soon after beginning to give postgraduate instruction at the Demilt Dispensary I induced some of the other physicians and surgeons to enter the same work, among whom were Dr. Satterthwaite in surgery, Dr. H. T. Hanks in gynecology, Dr. George M. Lefferts in laryngology, and others in other branches, whose names escape me. Dr. Satterthwaite remembered all this and confirmed all my statements at the time. After a time our corps of teachers appointed a committee, who published the lectures of one or more of the men each month in the NEW YORK MEDICAL JOURNAL.

After a while longer we gathered together and proposed to turn the Demilt Dispensary into a postgraduate teaching school; when this was found to be infeasible it was proposed to open one elsewhere, and the polyclinic was started in the old Glass Hall, in East Thirty-fourth Street, almost opposite the New York Skin and Cancer Hospital, which had just opened a small building at 243 East Thirty-fourth Street. In this I was associated with these gentlemen and expected to have the department of dermatology. Just then, however, the New York Hospital opened its new building in Sixteenth Street, and I began almost immediately to give my Wednesday afternoon lectures and demonstrations of skin diseases and syphilis there. I then withdrew from the polyclinic enterprise, as the Skin and Cancer Hospital and the New York Hospital clinics took all the afternoons, six days in the week.

L. Duncan Bulkley, M. D.

FUMIGATION TREATMENT OF SYPHILIS.

New York, *April 26, 1921.*

To the Editor:

In response to the letter of Dr. Walter James Highman, on Spirocide (mercupressen), to the New York Medical Journal, I will answer Dr. Highman's questions seriatim. That this can be done in a valid way as he wishes is easily proved by the fact that I have been experimenting with and using this preparation for the past three and a half years, and originally called Dr. Burns's attention to it, and as in one of your paragraphs you say "In anticipation of a possible reply by Dr. Burns or perhaps someone else conversant with the use of spirocide, I should like to amplify some further details involved in the above six questions," and as I am conversant, I shall take the liberty of answering the questions, without studying the case reports given by Dr. Burns, and I shall be glad at any time to show cases of my own and many other observers to prove my statements.

1. Does spirocide cause manifest lesions to involute more rapidly than other treatment? Yes, they disappear more rapidly, especially in primary cases, than with any other form of antisyphilitic treatment that I have ever used.

2. Do the lesions tend to recur less frequently than after other treatment? Yes, I have had primary chancres cicatrize at the third treatment and disappear, with the exception of a slight discolored scar, within three days after the last treatment, making nine or ten days from the first treatment. The mucous patches in secondary cases are much more likely to remain after the ordinary skin lesion has disappeared, on account of the intensity of the spirocide treatment, it being an intensive mercurial medication; but this all disappears within a week after the cessation of the last treatment. The statement Dr. Highman makes that there are few tertiary lesions in the Army is wrong, because in General Hospital No. 5 there were many such cases treated with spirocide which have not yet been reported on account of Army regulations, but which I can furnish on request. With few exceptions, in none of the cases, primary or secondary, which have been treated by me in the last three years, have the lesions returned—possibly two out of fifty or sixty.

3. Does it cure cases refractory to other treatments? Yes, it negatives Wassermann tests and eradicates symptoms in many cases, and has done so where repeated arsenical injections and mercurial treatments have failed, even when such cases have been under treatment for more than a year. In late refractory cases the Wassermann is often negatived, even in many asymptomatic, bloodfast Wassermanns which have failed to respond to other treatments.

4. Does the Wassermann reaction disappear more rapidly than after other treatment? Yes, not only more rapidly but more surely, as the original six treatments seem to be sufficient to make the Wassermann negative, often after three months without any further treatment whatsoever, and in latent cases from forty to fifty per cent. have been negatived without a return for the past two or three years.

5. Does the Wassermann reaction stay away when gone? Yes, in the majority of cases the Wassermann remains negative with few exceptions. (Three years' observation.)

6. Why did the Army not adopt this method of treatment after the experiences reported by Dr. Burns from General Hospital No. 5, Fort Ontario, Oswego, N. Y.? Because an obligation on my part prevented me from giving the formula to the Surgeon General of the Army (General Ireland), which obligation was not removed until after much persuasion and then too late, as the armistice was in force and most of the Army disbanded; however, the formula has been given to the A. M. A. since then.

It is surprising that one of Dr. Highman's ability should permit himself to be guided and circumscribed by the rules laid down by the Surgeon General's office, in the Manual of Venereal Diseases, as this would show that he is not broadminded enough to try a new treatment without it being sanctioned by others, especially as he is not in the Army at present and is not guided by their regulations.

As regards the individual effect of the various ingredients of spirocide, we can only state that the removal of any of the ingredients retards the value of the drug as a cure. I would ask Dr. Highman whether he has cured any case of syphilis with arsenic without its being in combination with other chemicals, such as used in arsphenamine and other preparations? I assert that mercury in combination is the easiest way and is most readily absorbed, and is the most efficient way of administering mercury, which Dr. Highman knows is the best of all treatments for syphilis, despite the fact that arsphenamine is given rarely alone but usually in conjunction with some mercurial preparation.

As far as the collapse of patients with the use of arsphenamine or other similar intravenous injections, I can only state that Dr. Highman has been extremely lucky in not having had any such experiences in his practice, as many others have been reported and have had such experiences, which are not to be looked for in the inhalation of spirocide. And as for these cases being ancient history, they are still occurring despite Dr. Highman's statement to the contrary.

J. Lewengood, M. D.

160 West Eighty-seventh Street.

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, MAY 4, 1921.

Collectanea

Man Made Diseases.—Many of the diseases that afflict man may almost be said to be made by him, says the United States Public Health Service, for they are spread almost altogether by his disregard of the simplest rules of sanitary living. Typhoid fever, for instance, is spread by the contamination of water, milk and food by human filth which has been run into rivers or wells or left exposed for flies to carry to the kitchen or dining room, or which even more disgustingly is carried to food directly from soiled hands. Hookworm disease and other intestinal diseases are spread, to some extent at least, by the states which allow road building gangs to work under conditions which too often compel them to scatter pollution to be carried by flies to their own kitchens, or to be ground into the soil to be picked up by the bare feet of children. Practically all hookworm disease is due to soil pollution. Malaria, too, is often spread by the ignorance and carelessness with which mosquito breeding places are created or disregarded. Borrow pits, dug to obtain stone for road work and other needs and left to fill with water, furnish homes for thousands of wigglers; culverts improperly placed produce pools that are equally prolific; ditches that are clogged and never cleared out are popular—and populous; railroad and other embankments that stop or check the flow of water create conditions that are ideal—from the mosquito point of view.

Dr. T. F. Abercrombie, health officer of Georgia, has suggested that the convict and other gangs who work along the roads be required to fill up borrow pits, place culverts properly, clean ditches, and attend to other small but important details that any man can do and that will deprive the mosquito of many of her breeding places. To accomplish this along the roads is more important than it may seem, for a mosquito hatched at the roadside does not have to wander in search of food; all she has to do is to wait for food to come to her. Moreover, if she is of the anopheline species, which spreads malaria, she has excellent chances both to acquire the malaria germs and to pass them along. Until she bites someone who has the disease, her bite, though no more pleasant than that of any other mosquito, is not any more dangerous. But a single malaria patient, driving along a ditch bordered, mosquito infested road, may provide hundreds of the insects with germs which they may pass on to every traveler along that road. Dr. Abercrombie, by making the roads of Georgia safe for man, may materially reduce the malaria hazard of the state, and, according to the Public Health Service, his example deserves to be followed.

Report of New York State Hospital Commission.—A summary of conditions as to insanity in New York state indicates progress both in prevention and cure of mental disease. The figures for the fiscal year which ended on June 30, 1920, show a total reduction of the patients in all the hospitals of the state.

In the year 46,118 were treated in the civil asylums, 1,611 in those for criminals, and 1,647 in licensed private institutions, a total of 49,376. There were altogether 7,242 new admissions, but these are balanced by 4,648 discharges and 3,830 deaths, leaving a net reduction of 1,236. The number of inmates at the close of the year was 40,781.

Among those discharged from the civil state hospitals, 1,673 persons were regarded as having completely recovered, 835 were much improved, 1,039 were improved and 91 were pronounced not insane. These numbers give a rate of cure on first admissions of 25.5 per cent. and on all cases of 19.8 per cent. These favorable figures are surpassed when the work of preventing insanity is considered. In this field recent figures show an unmistakable improvement. In 1917 the ratio of first admissions was 69 to 100,000 of the population; in 1920 it fell to 63.3.

Female Defective Delinquents Provided a Place by the State.—The Division for Defective Delinquent Women, created by act of the 1920 legislature at the New York State Reformatory for Women at Bedford, is now established and functioning. The institution has been visited and the situation studied as specified in the law by the State Commission for Mental Defectives, and the recommendations of the Commission with regard to the organization of the department have been carried out.

Several cottages have thus far been set aside for those committed to the Division.

The Reformatory has notified the New York courts that the Division is ready to receive women offenders committed as mental defectives, or those who are committed for observation in accordance with the provisions of the law. The law also provides for the transfer, through the courts, of women found to be mentally defective from Bedford and other institutions for delinquent or criminal women over sixteen years of age. Thus far the Division is composed entirely of women from Bedford.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 14. NEW YORK, WEDNESDAY, MAY 18, 1921. WHOLE No. 2209.

Studies on the Bacteriology of the Alimentary Tract*

(From the Wards and Bacteriological Laboratory, Guy's Hospital)

By N. MUTCH, M. A., M. D., F. R. C. P.,
Assistant Physician, Guy's Hospital,

and

JANE MUTCH, B. A.,
London.

The observations of the flora of the alimentary tract of the cadaver which have been made by many workers are of but limited value since the distribution and relative predominance of the various organisms undergo modification in the agonal period and after death. In the present study attention has been confined solely to conditions obtaining during life, all material other than feces or that collected from the mouth, being secured during the course of abdominal operation. Cultivations from the large intestine were made immediately after colectomy, at the same time cultivations were often secured from the last coil of ileum, a ligature having been tied by the surgeon about an inch above the ileocecal valve at the commencement of the operation. The ileocolic lymphatic glands were also obtained from the same source. The chyme at higher levels was sampled at laparotomy by injecting—with a syringe—twenty c. c. of sterile water into the appropriate loop and withdrawing the fluid again with its complement of debris.

Streptococci are present in the alimentary tract in a large proportion of mankind, at all ages from infancy to old age. When the digestive apparatus is free from anatomical defect and the individual is apparently normal, the varieties and relative numbers of the cocci are limited. Under such circumstances they grow in short chains only, are apparently not virulent and disappear rapidly after injection into the blood stream or tissues of healthy laboratory animals. Their habitats are principally the mouth and colon. It is most improbable that they are present in the small intestine in any numbers. This opinion is based upon a comparison of their prominence in the jejunum and ileum in gross disease with their paucity in or absence from these situations in patients suffering from minor derangements of health.

Under conditions of disease modifications often arise as follows: 1. The number of streptococci increases both absolutely and relatively to the rest of the flora. 2. New morphological strains appear in great variety.

The new strains vary among themselves in chain length, the size of the cocci, their hemolytic power, their color reactions on blood agar, their saprophytic vigor and their infectivity. Most of them grow in chains of more than fifteen members, others are short chained but differ from the cocci of healthy subjects in the scantiness of their growth on ordinary laboratory media. Chain length is of no value as a criterion of pathogenicity. Many of the short chained varieties are probably pathogenic. Still for the purposes of the present communication the streptococci have been divided provisionally into

a. Short chained Streptococcus brevis (Lingelsheim type).
b. Short chained streptococci of low saprophytic vigor.
c. Long chained streptococci or the Streptococcus longus Lingelsheim type.

Only such cocci as grow in chains of fifteen or more members have been placed in this group. The term Streptococcus longus has been used to include all such strains irrespective of any other property they may possess. Observations here recorded are restricted to members of this third group of streptococci.

GLYCOPHILIC STREPTOCOCCI.

Methods hitherto adopted for the differentiation of streptococci while emphasizing certain peculiarities afford no criterion which can be used for the recognition of the streptococci of the alimentary tract as a strain of organism distinct from other streptococci. There is, however, one biological property, namely, great acceleration of growth following the addition of two per cent. dextrose to

---

* All expenses incidental to this research have been defrayed by grants from the Medical Research Committee. I am greatly indebted to Sir Arbuthnot Lane for affording facilities for the collection of material during operation, and to Prof. John Eyre for suggestions and criticisms in the laboratory.
[Reed, March 31, 1920].

Copyright, 1921, by A. R. Elliott Publishing Company.

nutrient broth, which appears to be sufficiently characteristic to fill the gap and has been observed in thirty-five of thirty-seven (ninety-five per cent.) consecutive colonic strains. The amount of acceleration is not uniform, but in the majority of cases is of an extreme degree. Some strains, growing in a typical flocculent manner in ordinary broth produce a thick deposit in twenty-four hours which on shaking creates a turbidity many times as dense as that of Bacillus coli communis growth in simple broth. The term glycophilic is suggested to distinguish streptococci showing this rapid growth in glucose broth. The glycophilic properties of ninety-three strains from a variety of sources were tested. The results are given in Table I:

TABLE I.

Consecutive Strains of Streptococcus Longus Tested for Glycophilia.

No.	Source.	Disease.	Chain Length.
A.—Extreme Glycophilia.			
1.	Feces	Chronic Colitis.	18.
2.	“	“ “	30.
3.	“	“ “	20.
4.	“	“ “	16.
5.	“	“ “	16.
6.	“	“ “	20.
7.	“	“ “	20.
8.	“	Rheumatoid Arthritis	20.
9.	“	“ “	40.
10.	“	“ “	22.
11.	“	“ “	20.
12.	“	“ “	21.
13.	“	“ “	20.
14.	“	“ “	16.
15.	“	“ “	16.
16	“	“ “	16.
17.	“	“ “	17.
18.	“	“ “	30.
19.	“	“ “	25.
20.	“	“ “	30.
21.	“	“ “	20.
22.	“	“ “	22.
23.	“	Rheumatic Fever	60.
24.	“	Acute Nephritis	100.
25.	“	Streptococcal Septicemia	16.
26.	“	Chronic Intestinal Stasis and Tabes Dorsalis	18.
27.	Cecum	Rheumatoid Arthritis	30.
28.	“	Chronic Nephritis	25.
29.	“	Graves's Disease	20.
30.	“	“ “	30.
31.	“	“ “	60.
32.	Appendix	Rheumatoid Arthritis	16.
33.	Lower Ileum	Chronic Colitis	16.
34.	“ “	Chronic Intestinal Stasis	20.
35.	“ “	Rheumatoid Arthritis	20.
36.	“ “	Rheumatism and Chronic Intestinal Stasis	16.
37.	“ “	Graves's Disease	30.
38.	“ “	“ “	40.
39.	“ “	Chronic Nephritis	30.
40.	“ “	“ “	16.
41.	“ “	“ “	20.
42.	“ “	“ “	25.
43.	Upper Ileum	Graves's Disease	16.
44.	Upper Jejunum	Graves's Disease	100.
45.	“ “	“ “	30.
46.	“ “	Diabetes Mellitus	20.
47.	Mouth (Tonsil)	Chronic Colitis	20.
48.	“ “	Rheumatoid Arthritis	22.
49.	“ “	Hodgkins' Disease	100.
50.	“ (Gum)	Rheumatoid Arthritis	16.
B—Moderate Glycophilia.			
51.	Feces	Chronic Intestinal Stasis and Syphilitic Aortitis	20.
52.	“	Rheumatic Fever	30.
53.	Cecum	Chronic Intestinal Stasis	30.
54.	Ileum	Chronic Intestinal Stasis	20.
55.	Jejunum	Chronic Nephritis	100.
56.	Mouth (Gum)	Rheumatoid Arthritis	40.
57.	“ “	“ “	18.
58.	“ “	“ “	20.
59.	“ “	“ “	25.
60.	“ (Tonsil)	Chronic Nasophargnyeal Catarrh	20.
61.	“ (Gum)	Chronic Marginal Gingivitis	35.
62.	“ “	Pyorrhea Alveolaris and Chronic Gout	28.
63.	“ (Tonsil)	Chronil Tonsillar Enlargement	35.
64.	“ “	“ “ “	20.
65.	“ “	Chronis Pharyngonasal Catarrh	45.
66.	“ “	“ “ “	50.
67.	Feces	Chronic Intestinal Stasis and Rectal Ulceration	16.
68.	Pelvic Colon	Rheumatoid Arthritis	60.
69.	Lower Ileum	Chronic Nephritis	30.
70.	“ “	“ “	100.
71.	Jejunum	Chronic Nephritis	30.
72.	“	“ “	30.
73.	Mouth (Tonsil)	Chronic Tonsilitis	30.
74.	“ “	“ “	16.
75.	“ “	“ “	20.
76.	“ “	“ “ and Subacute Arthritis	22.
77.	“ “	Chronic Nasopharyngeal Catarrh	17.
78.	“ (Gum)	Pyorrhea and Chronic Colitis	35.
79.	“ “	“ “ Gastritis	28.
80.	“ “	“ “ Colitis	22.
81.	“ “	“ “ Intestinal Stasis	20.
82.	“ “	“ “ “ Stasis	25.
83.	“ “	“ “ “ Stasis	20.
84.	“ “	“ “ “ Stasis	17.
85.	“ “	“ “ “ Stasis	35.
86.	Arm	Chronic Skin Infection	24.
87.	“	“ “ “	18.
88.	“	Cellulitis	50.
89.	Leg	Gunshot Wound	100.
90.	Face	Cellulitis	23.
91.	Blood	Puerperal Septicemia	50.
92.	Lung	Unresolved Pneumonia	25.
93.	Face	Erysipelas	18.
94.	Face	Pyodermia	23,

TABLE II.

(SUMMARY OF TABLE I.)

Source of Streptococcus	Number of Cases	Glycophilia Extreme A	Glycophilia Moderate B	Glycophilia Slight or Absent C
Feces and Colon		87%	8%	5%
Ileum	Chronic Infections only	79%	7%	14%
Jejunum		50%	17%	33%
Mouth		14%	39%	47%
Infections unrelated to the alimentary tract		0%	0%	100%

Tables I and II may be summarized thus:

1. Almost all (ninety per cent.) long chained streptococci from chronically disordered colons possess extreme glycophilia.

2. At higher levels of the digestive tract the proportion of markedly glycophilic strains diminishes progressively and in chronic infection of the mouth reaches its lowest value (fourteen per cent.).

3. The proportion of aglycophilic strains of streptococci is small at all levels, reaching its maximum (forty-seven per cent.) in the mouth.

4. Streptococci derived from infective conditions unrelated to the alimentary tract show little or no glycophilia.

The power of stimulating streptococcal growth is not confined to dextrose. The strain, No. 27 in Table I (obtained from the cecum of a patient with rheumatoid arthritis), was used to test the accelerative action of a series of sugars. Dextrose, maltose, lactose, saccharose and salicin appeared to produce equally good effects, while inulin and mannite were powerless to accelerate growth. The streptococcus brevis normally present in feces and often referred to as Streptococcus fæcalis is markedly glycophilic but never furnishes the extreme examples of glycophilia shown by Streptococcus longus.

THE SIGNIFICANCE OF GLYCOPHILIA.

Glycophilia would appear to be the expression of the effect of environment on the streptococci. The education of the coccus in this form of saprophytism probably commences in the mouth in relation to foci of food stasis around the teeth or in the crypts of chronically enlarged tonsils. In such localities infective cocci with no glycophilia are repeatedly placed in contact with impacted carbohydrate. Here the organisms in the surface exudates are laved in a sugary medium and successive generations slowly acquire the power of preying on this substrate. It may be suggested that in this way new races are evolved characterized by a certain attenuation of virulence and gain of saprophytic vigor just as readily as they are produced by long growth on laboratory media.

Thus the mouth may be looked upon as a preliminary training ground and, as would be expected, cocci possessing all degrees of glycophilia abound therein. Cocci of all types are swallowed in enormous numbers and of these many escape destruction in the stomach, particularly in ill health. When the lower intestines are reached the available nutriment is much less than in the zones of food stasis in the mouth, and the struggle with contending saprophytes is more intense. Cocci which have acquired glycophilia in the mouth are better equipped for the fight and consequently survive in the chyme, while those devoid of this property are rarely found in the lower parts of the intestines.

So constant is the possession of glycophilia by intestinal streptococci and so peculiar is it to organisms secured from the alimentary tract that it appears justifiable to utilize it as a criterion for the recognition of the source of streptococci whose origin would otherwise be obscure. It may be taken as the mark of a coccus whose ancestors have for countless generations lived as semiparasites among the carbohydrate débris of the digestive tract. Cases IV, V and VI are examples of the application of this hypothesis.

If the transition of the coccus from parasite to saprophyte were complete it would undoubtedly be beneficial to the host since it is improbable that any harm could result from the presence of such organisms among the fecal residues. But such is not the case. Streptococci exhibiting glycophilia to extreme degree have been isolated from

a. The peritoneal cavity in general peritonitis (Case I).

b. The pleural cavity (in association with Bacillus coli communis) in empyemata secondary to alimentary infection (Case II).

c. The ileocecal lymphatic glands of patients with chronic disorders of the alimentary tract (Case III). Their isolation from these situations definitely establishes the fact that extreme glycophilia is a property compatible with considerable infectivity. Cocci possessing both these powers are particularly well equipped for establishing chronic infections wherever carbohydrate stagnates in the alimentary tract, because they can accomplish dual modes of life, as parasites in the tissues and as saprophytes among the surface residues. Their tenure is doubly strong and is not terminated unless the tissue defences become too great and at the same time conditions in the chyme become incompatible with their survival. Theoretically these two events are not likely to arise simultaneously and clinical experience shows that streptococcal infections of the intestines when once established show little tendency to spontaneous cure.

Case I.—D. A., a man aged thirty-four, had suffered from recurrent attacks of abdominal pain over the region of the appendix. A chronically inflamed appendix was removed surgically. A few days later symptoms of spreading peritonitis arose, and a second incision was made with the object of securing efficient drainage. Infected material was removed from the peritoneal cavity on a swab and inoculated on to a slope of nutrient agar. On cultivation it yielded a pure growth of glycophilic Streptococcus longus. Cultivation of the feces prior to the appendicectomy gave a growth of Bacillus coli and glycophilic Streptococcus longus. The contents of the appendix also contained these two organisms.

Case II.—S. 3, a man aged forty-seven, was operated on for gangrene of the appendix. There were no signs of abdominal complications after the operation, but a few days later he experienced pain in the right side of the chest. A rib was eventually resected and a right sided empyema thoracis drained. The pus was foul smelling, and on cultivation it yielded Bacillus coli and glycophilic Streptococcus longus.

Case III.—(G. D.) E. T., aged forty-eight, a woman with Graves's disease. Symptoms noticed for three months. Bowels moved twice a day for twenty of thirty years past and during recent years diarrhea induced by any slight excitement. Severe visceroptosis was present. All teeth extracted for pyorrhea four months before investigation. The temperature was normal. Jejunum: no growth. Upper ileum: no growth. Lower ileum: Bacillus mycoides and anaerobic bacilli. Cecum: Numerous varieties of anaerobes. Streptococcus longus (glycophilia extreme; chain length 60); dominant aerobe. Aerobes: Sarcina faecalis, twenty per cent. aerobes; Bacillus coli communis, less than one per cent. of aerobes. Ileocolic lymphatic gland: Pure culture of glycophilic Streptococcus longus.

Case IV.—(S. 1.) Man aged twenty-five. Rheumatic fever at eight. Free from symptoms until twenty-four. His work then became unduly hard and surroundings unhealthy. Diarrhea set in, followed by anemia and dyspnea. At the time of the investigation hemoglobin thirty per cent., albuminuria, two per mille., pyrexia intermittent and severe, hematuria pronounced, aortic and mitral valves incompetent. An autopsy later showed characteristic fungating endocarditis. The blood culture (during life) showed extremely glycophilic Streptococcus longus, nonhemolytic but staining blood agar a greenish color. In the feces similar streptococci were found in large numbers.

Case V.—(S. 2.) A soldier who had suffered from intermittent diarrhea for twelve months. During the last month he had become pyrexial, the pyrexia being of the typhoid type. The blood culture gave extremely glycophilic Streptococcus longus in chains of fifty, slightly hemolytic. The feces showed anhemolytic strongly glyophilic streptococci in considerable numbers.

Case VI.—(S. 13.) A woman with rheumatoid arthritis. The urine was free from pus but containing pure cultures of extremely glycophilic Streptococcus longus in chains of fifty. The feces contained similar streptococci.

The great frequency with which chronic streptococcal disease of the intestines exists in rheumatoid arthritis will be discussed in a later paper.

DISTRIBUTION OF STREPTOCOCCUS LONGUS IN THE ALIMENTARY TRACT IN CHRONIC DISEASE.

The general scheme of distribution is uniform in a great diversity of clinical conditions. In the mouth the cocci are common and numerous. In the stomach they are rare. In the intestines they can be found in every part, increasing in numbers progressively as far as the ileocecal region and then diminishing again gradually throughout the length of the colon. In the mouth they are usually free from admixture with members of the Bacillus coli group. In the upper levels of the small intestine they are also free from Bacillus coli, but in the lower parts of the ileum Bacillus coli accompany the cocci and the relative proportion of the cocci to Bacillus coli diminishes progressively throughout the rest of the bowel until in the pelvic colon it frequently happens that Bacillus coli alone survives. The level at which transition takes place from a pure coccal flora to one compounded of cocci and Bacillus coli is variable. It is usually in the lowest coils of ileum but may be as low as the ileocecal valve, the whole of the small intestine being then devoted to streptococcal activity. Exceptional cases also occur in which the predominance of streptococci over Bacillus coli persists as low as the pelvic colon and is evident in plate cultivations of the excreta.

The results obtained by serial investigations at various intestinal levels in twenty-one consecutive cases are summarized in Table III. The differential counts showing the relative proportions of Bacillus coli and streptococci recorded in Tables III, IV, V, XI, XII, and XIII, were all made in the following manner: A standard loop was evenly filled with feces and this amount of excrement was carefully emulsified in five c. c. of nutrient broth. From this emulsion a drop was removed with the same standard loop and used to inseminate nutrose agar plates. After incubation at 37° C. for three days the colonies which had developed on the plates were examined and counted. The figures show the relative numbers of Streptococcus longus to per hundred Bacillus coli. In every case the streptococcal predominance is seen to diminish with the descent along the intestines. In the last column the average proportions are given for each level. Although the transition takes place at different rates in different cases, the average results show that the lower ileum is the critical point for most cases.

Details of a more extensive series of patients, in the majority of which observations were made at one intestinal level only, as given in Table IV. They show great variations in the degree of streptococcal dominance encountered in different individuals at all levels from the lower ileum downwards. The zone of greatest instability is the lower ileum. This fact harmonizes with the indications of Table III that this region is the critical point in the transition from streptococcal to bacillus dominance. Table V is a summary of Table IV. It reveals the duodenum and jejunum as the streptococcal zone, the lower ileum as the zone of symbiosis, and the colon as the site of Bacillus coli predominance.

In the last column are tabulated the average values for the ratio of streptococci to Bacillus coli. The steady decline of streptococcal dominance in the lower parts of the intestines is shown in exactly the same manner as in the last column of Table III, where serial observations were made on each patient. The same principle is demonstrated graphically in Fig. 1, which is compiled from Table V.

The source of bacteria.—The organisms are introduced through the mouth. Many are no doubt taken in with the food, but the most fruitful sources are chronic infections of the gums, toothsockets, tonsils and pharynx. It is an event of extreme rarity to find a patient whose mouth and throat have always been free from any form of chronic infection, and yet who suffers from chronic alimentary disorder. There is no very close relationship between the intensity of the infection in the bowel and of that in the mouth. It is indeed by no means uncommon to find gross streptococcal infection of the intestines, even when the mouth infection appears to be of a very trivial nature and fails to yield streptococci in cultures (e. g., Case V, Table III).

Such apparent exceptions cannot, however, detract from the significance of the extremely common

TABLE III.

Showing transition from streptococcal dominance in the upper part of the intestines to Bacillus coli dominance in the lower zones (81 specimens) The ratios are those of Streptococcus longus to Bacillus coli.

Site	1 (Ray 2)	2 (G.D. 6)	3 (X. 12)	4 (X. 5)	5 (R$_2$)	6 (G.D.$_{11}$)	7 (G.D.$_{10}$)	8 (G.D.$_9$)	9 (X6)	10 (B$_1$)	11 (X$_8$)	12 (109)	13 (111)	14 (121)
Mouth		100:0	100:0		0:0									
Duodenum												100:0	100:0	100:0
Upper Jejunum	0:0	100:0	0:0		0:0	0:0	0:0	0:0	0:0	100:0				
Upper Ileum	99:1	100:0	100:0		0:0	0:0	0:0	100:0	0:0					
Middle Ileum (actually only 2 feet above Ileocecal valve)				66:34										
Lowest Ileum	99:1	100:0	5:95	60:40	100:0	0:0	98:2	0:100	4:96	99:1	100:0	14:86	78:22	5:95
Cecum	50:50		0:100	25:75	21:79	99:1	50:50	0:100	0:100	16:84	79:2	0:100	21:79	
Pelvic Colon	0:100		0:100	0:100	7:93						1:99			
Feces	0:100	20:80			0:100	12:88				0:100				

Site	15 (X$_4$)	16 (105)	17 (106)	18 (112)	19 (St.$_2$)	20 (W)	21 (St.$_3$)	Mean Streptococcus longus: B. coli
Mouth					100:0	100:0	100:0	100:0
Duodenum		100:0	100:0	100:0				100:0
Upper Jejunum								100:0
Upper Ileum						0:100		80:20
Middle Ileum (actually only 2 feet above Ileocecal valve)							53:47	59:41
Lowest Ileum	67:33	1:99	0:100	0:100	100:0		50:50	46:54
Cecum	1:99			0:100	1:99		20:80	24:76
Pelvic Colon							0:100	1:99
Feces					0:100		0:100	5:95

TABLE IV.

Showing variations in the proportion of Streptococcus longus to Bacillus coli at given intestinal levels in different patients.

(Ratios given are Streptococcus longus : Bacillus coli)

Duodenum—Case: D1 100:0, D2 100:0, D3 100:0, D4 100:0, D5 100:0, D6 100:0, D7 0:0, D8 0:0, D9 0:0, D10 0:0, D11 0:0, D12, 0:0, D13 0:0, D14 0:0, D15 0:0, D16 0:0, D17 0:0, D18 0:0.

Jejunum (Highest coil)—Case: J1 100:0, J2 100:0, J3 0:0, J4 0:0, J5 0:0, J6 0:0, J7 0:0, J8 0:0, J9 0:0, J10 0:0, JII 0:0, J12 0:0.

Upper Ileum (Middle of small intestine)—Case: M1 100:0, M2 100:0, M3 100:0, M4 100:0, M5 99:1, M6 +:+, M7 0:100, M8 0:0, M9 0:0, M10 0:0, M11 0:0.

Lower Ileum (Lowest coil)—Case: I1 100:0, I2 100:0, I3 100:0, I4 100:0, I5 99:1, I6 99:1, I7 99:1, I8 98:2, I9 78:22, I10 76:33, I11 66:34, I12 60:40, I13 26:74, I14 24:76, I15 9:91, I16 5:95, I17 5:95, I18 4:96, I19 1:99, I20 1:99, I21 +:+, I22 0:100, I23 0:100, I24 0:100, I25 0:100, I26 0:100, I27 0:100, I28 0:100, I29 0:100, I30 0:0, I31 0:0, I32 0:0.

Cecum—Case: C1 99:1, C2 79:21, C3 50:50, C4 50:50, C5 25:75. C6 21:79, C7 21:79, C8 16:84, C9 3:97, C10 1:99, C11 1:99, C12 +:+, C13 0:100, C14 0:100, C15 0:100, C16 0:100, C17 0:100, C18 0:100, C19 0:100, C20 0:100, C21 0:100.

Pelvic Colon and Feces—Case: F1 100:0, F2 77:23, F3 77:23, F4 52:48, F5 45:55, F6 43:57, F7 25:75, F8 20:80, F9 13:87, F10 12:88, F11 9:91, F12 7:93, F13 4:96, F14 4:96, F15 3:97, F16 2:98, F17 2:98, F18 1:99, F19 1:99, F20 +:+, F21 +:+, F22 0:100, F23 0:100, F24 0:100, F25 0:100, F26 0:100, F27 0:100, F28 0:100, F29 0:100, F30 0:100, F31 0:100, F32 0:100, F33 0:100, F34 0:100, F35 0:100, F36 0:100, F37 0:100.

TABLE V.

(Summary of Table IV.)

Site	*No. of Cases*	*Excluding cases not yielding either organism*				
		Percentage of pure Streptococcal Infections	*Percentage of pure Coli Infections*	*Percentage mixed Infections*	*Percentage of cases not yielding either organism*	*Ratio—Streptococcus longus Bacillus coli*
Duodenum	18	100	..	..	.67	100:0
Jejunum	12	100	..	.	.83	100:0
Upper Ileum	11	.57	.14	.29	.36	83:17
Lowest Ileum	32	.14	.28	.58	.09	41:59
Cecum	21	..	.43	.57	..	18:82
Pelvic Colon and Feces	37	.03	.43	.54	..	14:86

occurrence of streptococcal infection in the mouth simultaneously with a similar infection in the lower parts of the alimentary tract.

Transit from mouth to bowel.—Normal gastric juice destroys most bacteria with which it comes in contact. Its hydrion content is measured by a PH 1.8, and even the most resistant Streptococcus longus cannot survive in the presence of hydrion concentration with PH of less than 4.6. Many cocci swallowed during a meal, when the acidity of the stomach is counteracted by the presence of protein and diluents, escape destruction in the stomach and pass uninjured in small protecting particles of food. The flow of gastric juice is diminished by many factors, such as acute infection, fatigue, unappetizing food, and at such times the transit of streptococci is more easily accomplished. The most favorable circumstance of all is the occurrence of persistent achylia, when probably most of the ingested cocci reach the duodenum alive. I have only once had the opportunity of actually observing the passage of cocci through the stomach. A woman (H. S.) suffering from chronic intestinal stasis was prepared for laparotomy, and on the day of operation contracted an acute tonsillitis, due to Staphylococcus aureus. Cultivations of chyme withdrawn from the duodenum at the operation were overgrown with Staphylococcus aureus, a phenomenon not observed in any other case amongst a series of thirty-one cultivations from the duodenum, and the first loop of jejunum made from patients with a variety of diseases but not suffering from any acute throat condition.

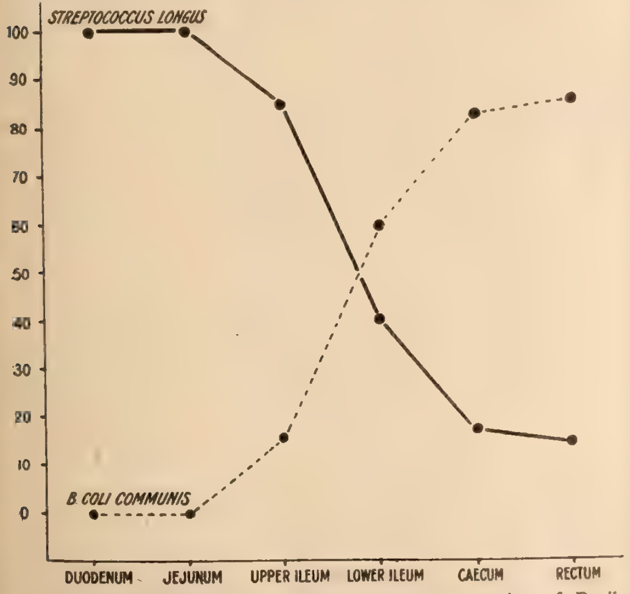


FIG. 1.—Showing the relationships between the number of Bacillus coli communis and the number of Streptococcus longus at various levels of the intestines. (Compiled from Table IV.)

Suitability of the intestinal habitat: A. Factors favoring streptococcal growth in the chyme.—1. Local delay is the primary factor. When food supply is maintained and waste products eliminated, fast growing streptococci double their numbers every thirty minutes. Delay of an hour would only quadruple their numbers, but delay of six hours would increase them four thousandfold.

In health, delays of this degree occur only in the colon and perhaps occasionally in the stomach. At the latter site food is plentiful, but growth is prevented by acid gastric juice. In the colon food is so scarce that Streptococcus longus is unable to thrive in competition with hardy saprophytes, although Streptococcus brevis contrives to live in relatively small numbers among the undigested vegetable residues.

In chronic intestinal stasis, points of secondary stagnation develop, and delay of six or even more hours commonly occurs in the lower coils of the ileum. Here food is available and reaction suitable, so that streptococci and other organisms thrive in great numbers. Partial obstruction, as by adhesions, bands, or cicatrices, can determine similar foci of bacterial activity in other portions of the small intestine.

2. Deficient assimilation of food in the upper parts of the digestive tract is the second essential factor. A rich nitrogenous food supply is requisite for streptococcal growth, but for streptococcal predominance in the presence of Bacillus coli generous admixture with carbohydrate is necessary. Such a nutrient medium does not find its way into the colon, or even into the regions of pathological delay in the lower coils of ileum, unless the digestive powers are seriously impaired or passage of chyme through the higher portions of the alimentary tract is unduly rapid. The precise dietetic elements have not yet been ascertained, but several facts stand out prominently. The more easily digestible the food, and the more thoroughly mastication is accomplished, the poorer are the residues upon which the ileo-colonic flora can rely.

The products of meat proteolysis induce much more rapid growth than do the products of casein digestion. The deposit produced after twenty-four hours' incubation in meat glucose broth is often more than twenty times as great as that produced in casein digest glucose broth. With some strains lemco added to the casein digest medium renders it almost as suitable as meat broth for streptococcal growth. It seemed possible that the difference between the growth in these media might be due to creatinin which was absent from the casein but present in large amounts in the lemco and meat. Preliminary experiments did not support this assumption, and the pursuit of this issue has been abandoned for the present.

B. Factors favoring invasion of the tissues.—1. Local impairment of tissue defence, as by abrasion, stercoral ulceration, distention, mechanical strains of all kinds, stagnation of putrefying chyme, venous engorgement as in piles, lymphatic stasis, and other factors. For the most part they are the results of visceroptosis and chronic intestinal stasis.

2. General depression of nonspecific immunity by all conditions inimical to health.

3. Depression of specific immunity determined by modifications at infected foci in the mouth.

The relative prominence of the factors grouped under the headings A and B differs in different patients. If A and B are both well represented, conditions in the intestines are favorable for the survival of almost any variety of Streptococcus longus. If A alone is pronounced, only strongly glycophilic strains can maintain themselves. Factors B in absence of A allow of the establishing of intestinal infection by virulent strains only, and glycophilia is of little moment. When neither factors A nor B are operative, chronic streptococcal disease of the intestine cannot be evolved by any strain of organism.

FACTORS DETERMINING THE DISTRIBUTION OF STREPTOCOCCUS LONGUS IN THE BOWEL.

A. Glycophilic varieties.—These occasion the large majority of chronic streptococcal infections in the intestines. Three circumstances influence their distribution in a marked manner:

1. Stagnation which provides the opportunity to multiply by geometrical progression.
2. Rich food residues.
3. The presence of carbohydrate.

The first two factors have already been considered. The third I have studied in a variety of ways, particularly by means of symbiotic coefficients devised to measure streptococcal dominance over other organisms under various circumstances. Their definition and method of determination are here exemplified:

Bacillus coli and Streptococcus longus were mixed in various proportions and planted in meat broth. (The streptococcus used in all symbiotic experiments here described was secured from the cecum of a patient with rheumatoid arthritis. It grew in chains of twenty-five, was anhemolytic and strongly glycophilic.) The supply of nutriment was maintained and accumulation of waste products prevented by subinoculation every twelve hours. The relative proportions to which the two bacteria ultimately attained, as determined by surface cultivation on nutrose agar plates, were constant, no matter what the proportions had been in the original mixture. (See Table VI.)

TABLE VI.

Experiment	1			2			3		
Period of incubation (hours)	0	12	96	0	24	72	0	36	48
Number of colonies of streptococci per 100 colonies of Bacillus coli	910	627	49	25	35	40	7	32	40

Under these conditions, and for these particular strains, the symbiotic coefficient is therefore about forty-three, which means that if the streptococci in the original mixture are less than forty-three per cent., as compared with the Bacillus coli, they increase relatively on incubation, and if they are more than forty-three per cent. their relative numbers decrease. The coefficient varies with different strains of organism, and with different conditions of growth, and is always very much smaller with aglycophilic than with glycophilic cocci. The experiment was repeated anerobically, using the same strains, and the coefficient rose to more than 100.

In dextrose broth, however, the phenomenon is reversed and the absence of oxygen favors the colon bacillus. It is noteworthy in this connection that in alimentary foci containing high proportions of Streptococcus longus, large numbers of stout spore-bearing gram positive anerobic bacilli, morphologically resembling Bacillus perfringens, are frequently found, and that the relative prominence of each organism often varies in a parallel manner when a series of observations are made on the same patient under various conditions. The anerobe often grows freely in symbiosis with Streptococcus longus, even in aerobic meat broth cultures.

TABLE VII-A

Showing the surviving organism after competitive symbiosis of Bacillus coli and Streptococcus longus in glucose broth.

			Organisms found on nutrose agar plates inoculated after varying periods from mixed culture of Bacillus coli and Streptococcus longus in glucose broth incubated at 37° C.				
No.	*Source*	*Disease*	*Immediately*	*After 24 hours*	*After 42 hours*	*After 72 hours*	*After 96 hours*
1.	Cecum	Rheumatoid Arthritis	Both	Streptococci only	Streptococci only	Streptococci only	Sterile
2.	Tonsil	Chronic tonsillar enlargement	Both	Both	Streptococci only	Streptococci only	Sterile
3.	Gum	Pyorrhea alveolaris and chronic gastritis	Both	Both	Both	Both	Both
4.	Gum	Chronic marginal gingivitis	Both	Both	Both	Both	Bacillus coli only
5.	Gum	Pyorrhea alveolaris and chronic colitis	Both	Both	Both	Both	Bacillus coli only
6.	Tonsil	Chronic nasopharyngeal catarrh	Both	Both	Bacillus coli only	Bacillus coli only	Bacillus coli only
7.	Gum	Pyorrhea alveolaris	Both	Both	Bacillus coli only	Bacillus coli only	Bacillus coli only
8.	Gum	Pyorrhea alveolaris	Both	Both	Bacillus coli only	Bacillus coli only	Bacillus coli only
9.	Sputum	Chronic asthma	Both	Both	Bacillus coli only	Bacillus coli only	Bacillus coli only
10.	Arm	Chronic skin infection	Both	Both	Bacillus coli only	Bacillus coli only	Bacillus coli only

Under aerobic conditions the coefficient was raised from forty-three to fifty-four by the addition of dextrose, but all these increases were entirely overshadowed by those observed when subinoculation was not practised. Under these circumstances the Bacillus coli rapidly die, and in a few hours' time the tubes contain pure cultures of streptococci. The following tables, compiled from representative experiments, demonstrate this.

Various mixtures of Streptococcus longus and Bacillus coli were incubated in two per cent. dextrose meat broth, and at intervals samples were taken, upon which differential counts of living bacteria were made by plating on nutrose agar.

TABLE VII.

Experiment	1			2				3				
Period of incubation (hours)	0	12	24	0	12	24	36	0	12	24	36	84
Number of Bacillus coli colonies corresponding to each 100 colonies of streptococci	13	78	0	625	192	38	0	2500	555	175	2	0

In Experiment 3, Table VII, the presence of four per cent. of glycophilic Streptococcus longus in the inoculated medium was sufficient to destroy all the Bacillus coli in about three days' time. This destruction of the Bacillus coli is brought about by the rising acidity, and can be effected by Streptococcus fecalis as well as by glycophilic Streptococcus longus. A small proportion of mouth streptococci also possess the property. Streptococci from other sources cannot destroy the colon bacilli in this manner, but after varying periods of incubation die, leaving pure cultures of Bacillus coli in the tubes. (Table 7A.)

Two per cent. glucose meat broth was inoculated with Streptococcus longus and Bacillus coli, and samples withdrawn after various periods of incubation. The relative numbers of the two organisms in the several samples were determined by plate cultivation of standard loops full of the culture on nutrose agar, and reaction estimated in terms of hydrion concentrations by the color comparison method, using alizarin red and standard solution of sodium acetate and acetic acid.

TABLE VIII.

	Aerobic Experiments		*Anaerobic Experiments*	
	Streptococci : Bacillus coli	Ph* (*Acidity*)	*Streptococci : Bacillus coli*	Ph* (*Acidity*)
	Expt. 1		Expt. 1a	
Immediately	193 : 100	7.3	193 : 100	7.3
After 16 hours....	59 : 100	..	58 : 100	..
After 20 hours....	296 : 100	..	43 : 100	..
After 24 hours....	5000 : 100	4.9	130 : 100	5.3
	Expt. 2		Expt. 2a	
Immediately	93 : 100	7.3	93 : 100	7.3
After 18 hours....	54 : 100	5.3	49 : 100	5.4
After 22 hours....	113 : 100	5.3	47 : 100	5.3
After 26 hours....	958 : 100	5.2	67 : 100	5.3
	Expt. 3			
Immediately	43 : 100	7.3		
After 18 hours....	33 : 100	5.5		
After 20 hours....	38 : 100	5.5		
After 22 hours....	63 : 100	5.3		
After 24 hours....	116 : 100	5.2		

*Hydrion concentrations bear an inverse relationship to the value of Ph.

It is evident from these tables that:

1. When the Ph is 5.4 or greater, Bacillus coli dominate the streptococci, and equilibrium is reached when the streptococci are rather less than fifty per cent. of the Bacillus coli.
2. When Ph is 5.3, conditions become more favorable to the streptococci.
3. When Ph sinks to 5.2, the cocci gain a very considerable mastery over Bacillus coli, and this streptococcal predominance increases as the acidity rises still further.

Therefore, Ph=5.2 must be taken as the critical value for pronounced streptococcal dominance over the strain of Bacillus coli used in these experiments.

Another fact of subsidiary importance emerges when Experiment 1 is compared with Experiment 1a, and Experiment 2 with Experiment 2a, namely, that acid production takes place more slowly under anaerobic than under aerobic conditions.

That hydrion, and not other bodies such as lactanion, produced at the same time by the bacteria, is the determining factor in the suppression of Bacillus coli, was finally proved by making up sugar free broth with the usual ingredients but with a hydrion concentration adjusted to 5.2.

Tubes were inoculated with Streptococcus longus, Bacillus coli, and with a mixture of the two organisms. After three days' incubation at 37° C., subcultures were made on agar slopes. The Streptococcus longus yielded good growth, the Bacillus coli no growth, and the mixture a growth of streptococci only.

The streptococcus alone of the two organisms survived and grew in the medium.

This critical reaction can be produced from a variety of carbohydrates. The strain of streptococcus used in the above experiments evolved the needed hydrion concentration from dextrose, maltose, lactose, saccharose, and from salicin, but not from mannite or inulin.

When the acidity rises still further to a Ph=4.6 the streptococci die also. Some strains of cocci can produce such an acidity and so destroy themselves, e. g., a streptococcus was incubated at 37° C. in glucose meat broth and also glucose meat broth plus excess of calcium carbonate. Subinoculations were made on agar daily and the broth tested for sugar by Fehling's reaction.

The coccus died rapidly in the simple glucose broth, not from exhaustion of the sugar, because the Fehling reaction remained strongly positive in each tube to the end of the experiment, but presumably from the rise in hydrion. The cocci survived in the other tube in which any pronounced alteration in the hydrion concentration was prevented by the presence of an excess of lime.

Although intestinal secretions are alkaline the chyme is frequently acid and local rise in acidity in the neighborhood of carbohydrate particles remote from the mucosa can doubtless reach the point required for streptococcal dominance, especially where peristalsis and the churning of the chyme is faulty.

It thus comes about that in the higher parts of the intestines where carbohydrate is plentiful, Streptococcus longus, when present, lives free from Bacillus coli, and in the lower parts of the colon Bacillus coli lives often unmixed with Streptococcus longus, whilst in the intermediate coils the two organisms live in varying proportions. In the uppermost parts, especially in the stomach in conditions of achylia, the rich solid carbohydrate masses amongst which diffusion is slow permit such a rise of acidity that the streptococcus is often in its turn destroyed by the more acid resistant Bacillus acidophilus, and only occasional cocci are found representing organisms specially protected in transit from the mouth.

From these observations *in vitro* certain deductions can be made; and that the underlying principles apply also *in vivo* is capable of demonstration, thus:

1. The proportion of streptococci to Bacillus coli in the feces as determined by aerobic plate culture can be diminished by the simple process of removing all carbohydrates from the diet. (See Table XI.)

TABLE XI.

Day of Experiment	*Diet*	*Bacillus coli : Streptococci*	
1	Full	100 : 15	Mean 17.3
2	Full	100 : 16	
3	Full	100 : 25	
4	Full	100 : 13	
5, 6, 7,	Carbohydrate free		
8	Carbohydrate free	100 : 3	Mean 1.7
9	Carbohydrate free	100 : 1	
10	Carbohydrate free	100 : 0.7	
11	Carbohydrate free	100 : 2	

2. Conversely, the proportion of Streptococci longus to Bacillus coli can be increased, a, by the free addition of vegetables and cereals, or, b, sometimes by the administration of lactose and magnesium sulphate each morning before breakfast. The latter method is not always certain in its action, but its effects are often very remarkable, and at times include the absolute suppression of Bacillus coli from the feces, their place being taken by innumerable streptococci representing many different types and strains.

A method of experiment more closely approaching the ideal would be to administer a test meal of one and a half ounces of corn flour boiled in half a pint of water six hours before colectomy, and examine the contents of the last coil of ileum immediately after the operation. This method has been followed whenever opportunity offered, and it was found that:

a. Some patients assimilated all the corn flour before it reached the ileum, and in such cases the ileal flora contained many Bacillus coli and few or no streptococci.

b. In other patients, carbohydrate digestion was severely impaired, the hydrolysed chyme reduced Fehling's solution strongly, and the ileal flora was rich in streptococci, sometimes to the complete exclusion of Bacillus coli from all parts above the ileocecal valve.

Carbohydrates appear to fill a similar rôle in the competition between Streptococcus longus and the nonlactose fermenting variants of Bacillus coli. A patient from whose feces each of these organisms had been isolated from time to time was placed upon a vegetable free diet and given a powerful diastatic ferment of vegetable origin after meals.

The following observations were made on the fecal flora:

TABLE XII.

Day of Experiment	*Typical Bacillus coli*	*Streptococcus longus*	*Nonlactose Fermenting Bacillus coli*
1	100	143	0
3	100	165	5
6	100	110	2
7	100	68	12
8	100	74	63
9	100	55	267

The table shows the diminution in the proportion of Streptococcus longus and increase in the proportion of atypical colon bacilli following upon the restriction of the amount of carbohydrate reaching the cecum. The foregoing observations indicate that, although a rich nitrogenous medium is required for the free growth of Streptococcus longus, the presence of carbohydrate plays a very important part in determining its dominance over members of the Bacillus coli group.

B. AGLYCOPHILIC VARIETIES.

A small number of streptococci with little glycophilic power have at times been encountered at all levels of the bowel. They depend for their distribution on their infective powers and upon the occurrence of areas of depressed mucosal resistance. Spreading along the tissues of the bowel wall, they reach positions in which conditions in the chyme itself are unsuitable for their growth. In these localities they are shed from the mucosa and can be recovered from among the bowel contents. Their life outside the tissues is probably very short, and their progeny have no opportunity of establishing a saprophytic existence in the chyme in competition with Bacillus coli. At high levels they are often the only pathogenic organisms present. At low levels their proportions alter greatly from time to time with variations in the activity of the mucosal infection. In periods of quiescence their numbers are characteristically low, averaging only three or four per cent. of the Bacillus coli, but during exacerbations they may actually outnumber the Bacillus coli. They are very difficult to find in the feces, apart from these exacerbations, because falling from the mucosa in very small numbers into an unsuitable soil they die before defecation. Local damage to which the rectal mucosa is especially susceptible, as in the neighborhood of piles, at times allows the more virulent varieties of streptococci to establish an infection in the rectum, even when the rest of the colon is free from these bacteria. For this reason the incidence of Streptococcus longus is slightly higher in the feces than in the pelvic colon.

FACTORS DETERMINING VARIATIONS IN THE STREPTOCOCCAL INFECTION.

When serial observations are made on the same patient, variations are noticeable from time to time in the numbers of streptococci in the feces and in the proportion which they bear to members of the Bacillus coli group.

a. Many of these are dependent on variations in diet and digestion. Tables XI and XII show how modification of diet produced these changes.

b. In many other instances the chyme is not altered, but modifications are introduced through the immunity reactions of the tissues. Thus diarrhea with an outpouring of streptococci not infrequently follows upon the extraction of septic teeth. In many patients attacks of streptococcal diarrhea recur at intervals, and the exciting cause of the recrudescences is completely obscure as in the following case: A patient with chronic ileal stasis, constipation, attacks of diarrhea, and streptococcal disease, was kept in bed on a constant carbohydrate free diet, and given sufficient cascara at eight hour intervals to secure two or three evacuations daily.

The carbohydrate free diet and cascara were given for three days before any observations were made, and continued throughout the experiment except on the fifth and sixth days, when cascara was omitted. Observations were made on the feces before, during and after an attack of diarrhea, and the results are here tabulated:

TABLE XIII.

Day of Experiment	1	2	3	4	5	6	7	8
Left Iliac Pain	Slight				Severe		Moderate	
Evacuations in 24 hours	4	2	4	3	7	3	2	2
Number of Streptococcus longus colonies on plates	38	8	10	4	632	836	221	104
Percentage ratio of streptococci to Bacillus coli	3	1	1	2	43	116	103	44

Both the actual number of streptococci in an approximately equal volume of feces (standard loopful) and the proportion of the streptococci to Bacillus coli rose greatly during the attack of diarrhea, and as the outpouring of streptococci persisted for several days after the cessation of diarrhea it is also evident that increased rapidity of evacuation did not play an important part in producing the phenomenon.

Sympathetic relationship between the various areas of mucosa infected by allied strains of streptococci is often remarkable. Thus the pain of superficial glossitis, or the burning dryness of chronic pharyngitis, often vary in a parallel manner with changes in left iliac pain or recurrences of diarrhea, while severe exacerbations of the throat infection often coincide with acute aggravation of all the intestinal symptoms. Similarly, after injection of an autogenous vaccine, transient aggravation followed by improvement of symptoms frequently takes place *pari passu* in bowel and mouth.

A negative phase in the immunity reactions of the body, determined by increased bacterial activity at one focus, affords bacteria of allied race opportunity of gaining simultaneous advantage over the cells of distant tissues among which they live.

SUMMARY.

1. Glycophilia is a property peculiar to streptococci of alimentary origin, and is almost universal amongst the streptococci present in the bowel. It may therefore serve as a criterion for the differentiation of streptococci of alimentary origin from other streptococci.

2. The proportion of streptococcal strains at any point which possess extreme glycophilia increases progressively at successive intestinal levels from mouth to anus.

3. A streptococcus can possess extreme glycophilia and at the same time considerable infective power. Such an organism is particularly well equipped for the evolution of chronic infection of the bowel.

4. A well defined pattern of distribution of Streptococcus longus in the alimentary canal has been observed.

5. Extensive streptococcal infection of the small intestine may exist even when repeated cultivation of the feces fail to yield any growth of Streptococcus longus.

6. The presence of carbohydrate is the most potent factor in determining the dominance of glycophilic streptococci over Bacillus coli at any level of the intestines.

Laboratory experiments with symbiotic coefficients and clinical observations are recorded in support of this statement.

7. Absolute suppression of Bacillus coli by glycophilic streptococci takes place when the hydrion concentration is measured by PH=5.2. The streptococcus itself dies if the PH falls below 4.6.

8. Streptococcus fecalis, as well as glycophilic Streptococcus longus, can suppress Bacillus coli when grown in glucose broth. This property is also possessed by a small proportion of long chained cocci from the mouth.

9. The following factors appear to control the evolution of chronic streptococcal infection of the bowel:

a. The presence in the mouth of centres for the production of glycophilic streptococci.

b. Impaired digestion.

c. Loci of stagnation in the intestines.

d. Diminished resistance of the tissues generally or locally.

Socalled Diseases of the Blood

By OLIVER T. OSBORNE, M. D.,
New Haven, Conn.,
Professor of Therapeutics, Medical Department of Yale University.

We cannot properly recognize or treat disturbances of the blood without a good understanding of its physiology as well as of its pathology. Therefore, before outlining the present consensus of opinion as to the best treatment of these diseases, it is pardonable to recall a few important physiological facts.

The most important tissue of the body as far as life is concerned is the blood, and disturbance of the blood, if not soon corrected, means disease and, sooner or later, death. It is not a diseased organ that causes death, but the absence of the function of that organ, and, therefore, a disturbance of the blood. It is generally not the local manifestation of an infection that causes death, but the toxins that are circulating in the blood that are fatal. Death during a disease may be due to an accident, as embolism, hemorrhage, perforation or suffocation, but, ordinarily, if a patient dying of an infection could be given for a time good, clean blood, the local manifestations of the acute infection would cease and the patient would recover.

1. The red bone marrow produces the red blood cells, though in fetal life these are believed to be produced in the spleen and perhaps in the liver. In normal conditions and in health, the red cells con-

tain no nuclei, although nucleated reds appear in the blood in certain diseases and in emergencies. When there is a great demand for red cells and the bone marrow is stimulated to an extra production, socalled reticulated cells appear in the blood. This stimulation of the bone marrow seems to occur when large numbers of red cells have been destroyed, or after a hemorrhage, but this rapid new production of red cells by the bone marrow seems to be inhibited, if too large transfusions of blood are given.

The exact length of life of the red cell is being carefully investigated, but it has been considered to be, normally, a series of days rather than a series of weeks. All red cells disintegrate, probably most of the disintegration occurring in the spleen and in the hemolymph glands, the hemoglobin then reaching the liver being broken up into hematin, which the liver stores and makes into bile pigments. Red blood cells are also destroyed by what is termed hemolysis, often in large numbers, due to some substances, hemolysins, circulating in the blood.

2. The polynuclear leucocytes (basophile, acidophile and neutrophile cells, the latter comprising about seventy per cent. of the total white blood count) are produced in the bone marrow. These cells have ameboid activity. The mononuclear cells, termed lymphocytes, are of two varieties, the large representing about three per cent. of the total leucocytes, and the small representing about twenty-five per cent. of the total leucocytes. These cells are produced by the lymphatic tissues and glands.

3. The hydrogen ion concentration of the blood should approximate $pH=7.4$, and the blood should test slightly alkaline to litmus. Any marked variation from this amount of hydrogen ion concentration causes symptoms, and if an acidosis occurs there is profound intoxication and coma. Any disease that diminishes the number of red corpuscles diminishes the alkalinity of the blood. The condition of acidosis most frequently occurs in serious diabetes, but any secondary anemia and privation of food will decrease the alkalinity. Also the hydrogen ion concentration may be decreased when the body is fighting serious infection, and especially if the patient is not receiving a sufficient amount of carbohydrates.

4. The specific gravity of the blood may have a normal range from about 1.040 to 1.070. If the specific gravity is much below this limit, destruction of red corpuscles can occur, and edemas and all the symptoms of poor circulation and poor nutrition develop. If the specific gravity is much above this limit, disturbances from the increased viscosity occur, with a tendency to phlebitis.

5. The hemolymph glands histologically resemble the spleen, and possibly when the individual survives splenectomy these glands assume part at least of the work of that organ.

6. About fourteen per cent. of human blood consists of hemoglobin, and ninety-six per cent. of the hemoglobin is globin and four per cent. is hematin, and it is the hematin that contains the iron, about four tenths per cent. The amount of iron necessary to satisfy that which is daily lost by metabolism is very little, three hundredths gram (one half grain) being sufficient under normal conditions, unless there is some unusual waste or destruction of red corpuscles. To insure that this amount of iron is offered for metabolism when iron is needed, five hundredths gram (or one grain) of an iron salt, as reduced iron, may be administered three times a day. Large doses under ordinary conditions are not needed.

It should be noted that women, and especially children, normally do not have one hundred per cent. of hemoglobin as determined by the usual methods; they may be perfectly normal with from eighty-five to ninety per cent., as measured by the ordinary hemoglobinometer.

7. The normal adult individual has long been thought to have the amount of blood represented by one thirteenth of his body weight, this provided he is not obese. This figure has lately been questioned and thought to be too large, and that it may not represent more than one twentieth of the body weight. It is often forgotten in diseased conditions the number of pounds (averaging from ten to twelve, perhaps) of tissue that is constantly in motion in the adult individual, and therefore how important it is that the patient be in a horizontal position, if he is in a weakened condition. Roughly estimated, about one fourth of the individual's blood is in the heart and large bloodvessels, one fourth in the liver, one fourth in the muscles, and the remaining fourth is distributed among the various internal organs. By position, by moist and dry heat, and by cold applications, the amount of blood in different parts of the body may be varied, and we do not as frequently as we should take advantage of such physical treatments in abnormal conditions. The amount of blood that can be lost by hemorrhage without being fatal is very great, provided that the loss is stopped and suitable fluids are rapidly given, best intravenously. It is not absolutely necessary that the fluid administered should be blood. Physiologic saline, or, better, Ringer's solution, or Locke's solution, containing five to ten per cent. of gum acacia, may be as efficient as an injection of pure or citrated blood.

BLOOD PLATELETS AND HEMORRHAGE.

The blood platelets emanate from the red bone marrow, and though their numbers vary in different conditions, and different investigators give a wide range of the normal numbers in the blood stream, the average has been thought to be about 250,000 to the cubic millimetre, although recently Gram (1) states that the average range is from 300,000 to 450,000 per cubic millimetre. As far as known, their most important function is connected with coagulation of the blood. No disturbances have been recognized as being due to an increase in the number of these platelets, but the disease of purpura hemorrhagica is associated with a great diminution or complete absence of these platelets. Duke (2) stated that the range of platelet count in his opinion is from 200,000 to 400,000, and that he had found patients who had from 40,000 to 75,000 per cubic millimetre who did not show a tendency to hemorrhage; but he believed that below this count there was always likely to be bleeding.

Duke (3) in a later article states that the blood platelet count is reduced during the febrile period of acute infectious disorders and increased again during convalescence. The platelet count is often increased in renal insufficiency. In diphtheria the toxin produced by the germs of the disease seems to be the cause of a fall in the platelet count, and Duke presumes that this is due to the action of this toxin on the bone marrow.

Gram (*loc. cit.*) finds the platelets are diminished in number in pernicious anemia, in most cases of lymphatic leucemia, and in some cases of myeloid leucemia. He suggests that the platelets should be more frequently counted before operations, as well as the bleeding time determined, especially in cases of aplastic anemia, as such determinations will show the operative risk.

In contradistinction to purpura hemorrhagica, the platelets are generally present in normal amount in hemophilia.

Purpura hemorrhagica seems to be due to either an inability of the bone marrow to produce blood platelets or, possibly, to some condition of the blood that destroys them as soon as they reach the bloodstream. In hemophilia, although the blood platelets may be normal, or even increased in number, according to some observers they are probably imperfect in their formation or in their activities. Hemophilia occurs only in males.

SPLEEN.

The spleen is apparently an important organ. However, its function is not vital, and it can be removed without causing death. Its function seems to be to produce leucocytes and lymphocytes and to destroy, or at least to be a depot for broken down red corpuscles. Associated with the liver and bone marrow, it has something to do with the production of hemoglobin. However, it seems that all of these functions may be assumed by other organs, perhaps the hemolymph glands, when the spleen has been removed. The spleen, also, seems to produce, or to encourage the activity of, phagocytic leucocytes, as during infection it becomes much hypertrophied. Also in many diseases of the blood it is enlarged.

The spleen may be hypertrophied and yet its size may not be determined by physical examination unless it is large enough to extend below the cartilages and ribs. William Mayo (4) states that "investigation leads to the conclusion that the function of the spleen is not only to remove from the blood bacteria and other toxic agents, but also to conserve the food values of broken down blood corpuscles, especially red cells, sending their remnants to the liver for elaboration into energy producing substances." Mayo suggests that an enlarged spleen in splenic anemia and hemolytic jaundice may be an hypertrophy due to extra work. He divides enlargement of the spleen into four groups: 1, new growths; 2, enlargements due to infections; 3, enlargements associated with disease of the liver; and, 4, enlargement associated with disease of the blood. He states that enlargement of the spleen may cause cirrhosis of the liver, and cirrhosis of the liver may cause an enlarged spleen, therefore, in the advanced stage of cirrhosis of the liver it would be difficult to tell which condition was primary.

Hematogenous jaundice has its origin apparently in the spleen. In hemolytic jaundice Mayo states urobilin is present in the urine, but no bile, and this type of jaundice is not associated with itching. He finds that clinically splenic anemia is an entity. The spleen is enlarged, the red corpuscles are reduced, and there is a low hemoglobin percentage. If the diagnosis of the condition is made before cirrhosis of the liver has occurred, splenectomy may cure the disease.

In hemolytic jaundice there is bile in the stools, no bile in the urine, and no itching of the skin, and therefore no evidence of biliary obstruction, the condition is due to disease of the spleen, and splenectomy is indicated and may be curative.

GAUCHER'S DISEASE.

Gaucher, in 1882, first described this condition which has been termed Gaucher's disease or splenomegaly, Gaucher. As the liver is also enlarged in this condition, Reuben (5) suggests the name of "splenohepatomegaly, Gaucher." This disease is apparently congenital, and though not hereditary, it may attack several members of the same family. It may attack children of most any age. As well as enlargement of the spleen there is also enlargement of the liver, and there is more or less anemia. Reuben says that the white cells are usually diminished, even when the red cells are normal in number. There is pigmentation in different parts of the body, notably the face, neck and extremities, but jaundice is not present and hemorrhage is not severe. Reuben states that the younger the child is when the splenic enlargement occurs, the graver is the prognosis. Adults may tolerate the disease for many years.

BANTI'S DISEASE.

Morris, Symmers and Shapiro (6) believe that this disease is not an entity, but is a manifestation of visceral syphilis. In other words, they believe this enlargement of the spleen, with sooner or later disturbance of the liver, and still later ascites, is due to syphilis.

The advisability of removing the spleen should be considered in hemolytic jaundice, in splenic anemia, in some cases of pernicious anemia, and perhaps in splenomedullary leucemia, provided that in these conditions the disease has not so far advanced as to cause a serious pathologic condition of other organs.

APLASTIC ANEMIA.

Minot (7) believes that acute aplastic anemia is a disease entity whose etiology is unknown and which is fatal in from three to six weeks, and occurs especially between the ages of fifteen and thirty. It is dissimilar to pernicious anemia in that there is no blood destruction, but the bone marrow is so diseased that it cannot produce the blood cells. Serious infections may cause such an aplastic condition of the bone marrow. The blood platelets in this condition are also greatly diminished, although Minot finds that the red cells and white cells are diminished before the platelets are reduced in number.

It would seem that acute aplastic anemia is due to an infection, and it is to be presumed, as in all serious diseases, that there can also be mild infections and therefore mild types; consequently the importance of seeking and eradicating, if possible, all foci of infection as soon as any form of anemia occurs.

ANEMIA.

Acute anemia caused by hemorrhage in sufficient amount to require a transfusion is generally best treated by the intravenous injection of five to ten per cent. acacia in Locke's or Ringer's solution. Blood corpuscles are not needed, as they will soon be supplied by healthy organs. Iron is hardly needed, as the liver has a sufficient amount of iron stored.

Secondary anemias can only be improved by treating the cause, and the cause may be anything from a cancer or tuberculous cachexia to a chronic focal infection, a chronic purulent discharge, an albuminuria, persistent small hemorrhages, or to underfeeding. Persistent pain can so upset digestion as to cause an anemic condition, and consequent denutrition. Of course, starvation can cause an anemia, although the blood is perhaps the tissue that best tolerates privation of food.

When the blood shows a diminished number of red corpuscles, with a high color index, a lowered white count, and even an occasional nucleated red cell, it may not denote that the patient has pernicious anemia. Other disturbances than actual disease of the bone marrow may cause the blood to have this picture. On the other hand, similar to any disease that the patient may have, it is quite possible that anemic conditions occur which are more or less resistant to treatment but that ultimately permanently recover, though they are due to actual disease of the bone marrow. In other words, there is no reason why mild cases of socalled pernicious anemia cannot occur. The very fact that in pernicious anemia long periods of improvement under almost any treatment do occur, shows that, doubtless, a mild form of pernicious anemia may occur and the patient recover without relapse. This possibility should cause every case of diagnosed pernicious anemia to be treated energetically, as a cure may occur.

In every case of anemia, besides treating the cause, if such is discovered, rest, fresh air, and good food, correction of all intestinal putrefactive conditions, and the administration of iron in some form, in small doses, will cause all the improvement possible, and will frequently bring the patient back to health. Whatever the type of anemia, and whatever the cause to which it is apparently secondary, all focal infections (and the most frequent are those in the mouth) must be eradicated. Also in many cases of anemia the hydrochloric acid of the stomach is diminished in amount, and generally this acid should be administered.

CHLOROSIS.

Chlorosis, which is a disturbance occurring in young girls at or soon after the age of puberty, is probably generally caused by dysfunction of one or more endocrine glands. It is almost always associated with amenorrhea, frequently with subthyroid secretion, and probably always with insufficient ovarian secretion. Associated with it may be gastrointestinal disturbances, craving for certain types of food and sometimes for substances that are not food; it is frequently associated with constipation, and, at times, with intestinal putrefaction.

The treatment is primarily purgatives, then laxatives if needed; good food, outdoor exercise, the administration of small doses of thyroid, perhaps ovarian substance, and iron in some form. Many a girl with chlorosis will be cured by thyroid treatment alone. Generally, as soon as the menstruation occurs with normal frequency, the chlorosis is cured. The possibility of parasites in the intestines being the cause of the chlorosis should always be considered, but, as above stated, generally the disturbance is due to an endocrine mistake.

PERNICIOUS ANEMIA.

The characteristics of the blood in this disease need not be outlined, and the progressive loss of strength, dyspnea, cardiac signs, and the disturbances of digestion are all well known symptoms. A peculiar symptom of this disease is that there is not much loss of weight with all of these serious symptoms. Characteristic of the real disease is a greatly diminished amount of free hydrochloric acid, or the absence of it, in the stomach.

The disease is caused by disturbances in the bone marrow, and is probably due to an infection. A large number of cases are associated with infection in the mouth; others have been associated with parasites in the intestines. That pernicious anemia may have periods of improvement does not mitigate against the probability that it is an infection. Not infrequently at certain periods of the disease there is more or less fever. The fact that for so long arsenic has been believed to be the best treatment simply adds its weight to the probability that this disease is caused by some one or more germs.

Arsphenamine has been lately used as a treatment, and with some success. Although there are many cases on record in which arsenic, pushed to the point of tolerance and even to the point of intoxication, has seemed to cause improvement in this disease, and even apparent cures are on record, still there is no good justification for using this dangerous drug. It has caused severe poisoning, such as destruction of corpuscles, nephritis, and multiple neuritis.

Besides the diminution of the hydrochloric acid secretion in the stomach, there is always more or less putrefaction in the intestines, and the liver seems to be impaired in its various functions, all showing a general disturbance besides that of the bone marrow.

As there can be no denial of the fact that focal infections will cause general debility and therefore blood disturbances in any individual, it would seem very essential in inaugurating the treatment of the disease of pernicious anemia that all focal infections should be eradicated, if possible. Certainly, the feces should be studied for evidence of parasites, and proper treatment instituted for their removal, if they are discovered. Intestinal putrefaction must be prevented by improving the stomach digestion with hydrochloric acid; by changing the food, and, if necessary, by temporarily withholding meat proteins; by necessary laxatives; by the administration of yeast, or of the Bacillus acidophilus, or of milk soured by that germ; or perhaps by the administration of phenyl salicylate (salol) in thirty hundredths gram (five grain) doses three or four times a day. Iron in small amount may be given, much is not needed. Plenty of fluid should be given the patient, and generally from one to two quarts of milk a day is advisable. Any food or treatment that causes diarrhea should be stopped, and watery movements of the bowels should be prevented; these patients need more fluid in their blood vessels.

The value of transfusion of pure blood has been shown by many clinicians, and notably by Lindeman. While transfusions of blood may not be curative, when the blood has been properly selected and properly administered there is always improvement, and after several transfusions more or less permanent improvement may occur. If by any treatment it is found that reticulated red cells are appearing in the blood, large transfusions should not be given, as it has been determined that these cells show increased activity of the bone marrow, and if considerable amounts of transfused blood are given this stimulation of the bone marrow ceases.

Besides the lowered blood pressure and the insufficient heart action disturbing the surface and general circulation which may lead to numbness as well as edema of the extremities, Woltmann finds that in over eighty per cent. of moderately advanced cases of pernicious anemia there is evidence of nervous tissue disintegration, and these disturbances are largely of the spinal cord. This accounts for some of the symptoms found in this disease. Also sooner or later besides the impairment of the function of the liver, the kidneys are disturbed, perhaps largely from lack of circulatory tone, but also because they must excrete an abnormal amount of irritant pigments, due to the breaking down of red corpuscles and to the impaired function of the liver as well as to the necessity of excreting the products of maldigestion.

It should be noted, however, that for years every case of pernicious anemia was treated with arsenic, and some of these nervous tissue disturbances and renal disturbances were doubtless due to arsenic.

As well as the bone marrow, the spleen, liver and lymph nodes are probably always in trouble in this disease. The spleen has been removed in pernicious anemia, but it has not been shown that this is curative, although many cases have shown improvement. The operative risk is very great when the red blood count is below two million. If it is deemed advisable to remove the spleen, blood transfusions should be given for some time before to, if possible, raise the blood to a higher standard. It would not seem that splenectomy was indicated in pernicious anemia unless the spleen was greatly enlarged.

To sum up the treatment of pernicious anemia:

1. If a Wassermann test is positive, administer arsphenamine.
2. Seek, and, if found, remove parasites from the intestines.
3. Seek, and, if found, remove focal infections.
4. Prevent putrefaction in the intestines.
5. Colon washings may be of value.
6. Administer hydrochloric acid, small amounts of iron, not infrequently a small daily dose (¼ to ½ grain) of thyroid, and a fair daily dose (1 to 2 grains) of suprarenal. The suprarenals are generally insufficient in any infection and in all chronic disability, and also mild thyroid stimulation is frequently indicated. Preparations of red bone marrow are of value.
7. The rest of the treatment consists of sunlight, fresh air, good food, and perhaps heliotherapy.

LEUCEMIA.

All that has been said in regard to the probable cause of pernicious anemia being an infection is equally applicable to the disease of leucemia, and acute leucemia is certainly an infection. Myelogenous leucemia is characterized by an increase of the polymorph leucocytes and a decrease in the red corpuscles and of their hemoglobin content. In this form of leucemia the spleen is always enlarged, sometimes enormously, and the bone marrow is also diseased.

Arsenic has also been largely used in this disease; it is not curative, and may do harm. The newer treatment with benzol (benzene), owing to its many dangers, does not seem justifiable, although it will cause a destruction of large numbers of leucocytes; but the increased number of leucocytes is only a symptom of the disease, much as glycosuria is a symptom of diabetes. Therefore, any treatment simply aimed at a diminution of white cells is tentative and not curative. Splenectomy is not of value in this disease. X ray treatments and radium treatments of the spleen seem to cause the greatest amount of improvement.

The best treatment today of splenomyelogenous leucemia is probably radium, or if that cannot be obtained, x ray treatment of the spleen; removal of all possible foci of infection; prevention of intestinal putrefaction; dilute hydrochloric acid if the stomach is short on this substance; a considerable amount of iron; preparations of red bone marrow; and the same general efforts to aid nutrition as in pernicious anemia. In lymphatic leucemia enlarged lymph glands should be subjected to radiation. It does not seem that radiation of first one long bone and then another, to affect the bone marrow, has been of any great advantage.

HODGKIN'S DISEASE.

This serious and generally fatal disease is due to an infection, and the lymph glands first to enlarge are those nearest the point where the infection has entered. Perhaps the most frequent point of entrance is the tonsils; therefore it is the glands of the neck that are first involved. Sooner or later, with this enlargement of more or less of the glands of the body, anemia occurs, and later cachexia. The disease may be associated with a tuberculous process elsewhere, but it is not a tuberculosis of these glands. It may occur at most any age, but is more frequent in youth, and mostly in males. The glands on one side of the neck are generally first involved, later, perhaps, the axillary glands on that side, then the glands of the other side of the neck, and still later the glands more or less all over the body, the mediastinal, bronchial, inguinal, etc. Frequently there is fever with this disease. Under treatment sometimes the glands become smaller in size, but the disease may still be progressing. Early in the disease the leucocyte count may not be much increased but late in the disease the leucocyte count may be greatly increased. The spleen may become involved, and also the liver. The disease has been thought to be an infective granulomatous lesion of the lymph nodes or a malignant growth of the lymph nodes, but Summers (a) believes that it is a systemic disease which has its local manifestations in lymphoid tissues.

It has been suggested that a diphtheroid organism which has been found in the mouth and nose was the cause of this disease, but this has not been proved, although there can be very little question that the disease is due to some kind of infection, derived most frequently from diseased tonsils, teeth, and nasal sinuses, although there are doubtless other portals of entry, as perhaps a bronchitis, or an abdominal focus.

Various lesions of the skin may occur in this disease, and Cole (10) states that among thirty-three cases of Hodgkin's disease, thirteen had some disease of the skin, either pruritus or a prurigolike exanthem, or a bronzlike pigmentation.

It has been suggested that, if the disease is noted early and only a few glands are involved, they should be removed. As there is no apparent cure and thus far no positively successful treatment, it would seem that we must rely on radium, and this treatment should be directed not only to the external glands, but to those of the mediastinum and abdomen. When radium treatment cannot be had, the röntgenray treatment should be given. Foci of infection must be removed, and every means taken to improve the nutrition and general health.

REFERENCES.

1. Gram: *Archives of Internal Medicine,* March, 1920, p. 323.
2. Duke: *Ibid,* November, 1912, vol. x, p. 445.
3. *Idem: Journal A. M. A.,* November 6, 1915, p. 1600.
4. Mayo, William: *Ibid,* March 4, 1916, p. 718.
5. Reuben: *American Journal of Diseases of Children,* November, 1914, p. 336.
6. Morris, Symmers, and Shapiro: *American Journal of Medical Sciences,* December, 1917, p. 893.
7. Minot: *Archives of Internal Medicine,* June, 1917, p. 1062.
8. Woltmann: *American Journal of Medical Sciences,* March, 1919, p. 400.
9. Symmers: *Archives of Internal Medicine,* June, 1917, p. 990.
10. Cole: *Journal A. M. A.,* August 4, 1917, p. 341.

177 Church Street.

Clinic: Blood Chemistry in Modern Medicine

By M. FORD MORRIS, Jr, M. D.,

Atlanta,

Visiting Physician to the Georgia Baptist Hospital and to the Anti-tuberculosis Association; Instructor in Medicine in the School of Medicine of Emory University.

CHEMICAL ANALYSIS OF THE BLOOD.

I shall mention only a few of the important and interesting facts revealed by chemical analysis of the blood. First, let us consider briefly the nonprotein nitrogenous substances of the blood—for these are the most important for everyday diagnosis, prognosis and treatment. These substances are urea nitrogen, uric acid, creatinine, and sugar.

On the accompanying chart you see the normal values of these substances, and also the findings in some other conditions. The total nonprotein nitrogen is increased in some forms of acute nephritis, in moderately severe chronic interstitial nephritis, in uremic nephritis, in bichloride poisoning, chronic lead poisoning, bilateral polycystic kidneys, and other conditions. Probably only in uremia, acute intestinal obstruction, and profound anemia from hemolysis, does the amount of total nonprotein nitrogen rise to more than 100 mgs. to the 100 c. c. of blood. Such an amount is of very grave prognostic significance, as a rule.

CHEMICAL FINDINGS.

Urea nitrogen, normally constituting about fifty per cent. of the total nonprotein nitrogen, but varying greatly in this percentage in disease, is mostly exogenous, and increases in amount in practically all cases, except in gout, when there occurs an increase in the total nonprotein nitrogen. The amount of urea nitrogen may be greatly reduced by the use of a nonprotein diet. When there is only a moderate amount of retention in nephritis, there is no necessity for the exclusion of meats from the patient's diet.

Uric acid.—The increase in the amount of uric acid, in the diseases named on the chart, is much less than that of the urea. An increase of uric acid usually accompanies all conditions in which there is an increase in the urea. When the uric acid only is increased, gout is very probable. In certain infectious diseases, particularly pneumonia, there is a marked increase of uric acid. The amount of this substance may be decreased by the exclusion of purins from the diet. By a blood chemical examination we may distinguish uncomplicated gout from uncomplicated arthritis.

Creatinine is wholly endogenous, being derived from muscle tissue. In disease, it is the last to increase—so far as urea and uric acid are concerned—and its increase is very significant. Except in a few cases of acute nephritis, the finding of five mgs. or more of creatinine to the 100 c. c. of blood has been followed by death within a few hours to within two months.

The greatest increases in these three substances occur in uremia. As no particular increase occurs in eclampsia, a blood chemical examination will serve to distinguish it from the uremia.

CASE HISTORIES.

CASE I.—This boy was nine years old. He had had only measles and mumps. Eight weeks before he had had acute nephritis, accompanied by anuria, edema, and convulsions. When first seen, five weeks before, he had slight edema about the eyes; blood pressure, 125 and 90; urine contained a trace of albumin and a few hyaline and granular casts; his blood showed: urea nitrogen, 44 mgs.; uric acid, 4.1 mgs., and creatinine, 3.3. The patient had greatly hypertrophied tonsils, which were removed. Two weeks later his urine contained only a slight trace of albumin and only a few casts. Blood examination showed: urea nitrogen, 30.1, uric acid 2.6, and creatinine, 2. At the last examination, several days ago, patient's blood showed: urea nitrogen, 9.0 mgs.; uric acid, 3.81, and creatinine, 1.7. The urine contained no albumin or casts. Chemical examination of the blood has been of value in this case, in that the increase in kidney function has been shown by a gradual decrease in urea, uric acid, and creatinine. And, likewise, examination of the blood from time to time will show whether the recovery will be complete or not.

CASE II.—This man was fifty-six years old. He complained of becoming fatigued and short of breath after a very little exercise. His heart sounds were faint and distant, and there was present a mitral leak. His blood pressure is 180 and 139. The pulse rate was 90. His urine contains considerable albumin and a few casts of the hyaline and granular variety. What we are particularly interested in now is whether his kidneys were functionally all right. Ordinarily, we would suspect nephritis, as a result of the urinary findings. However, chemical examination of the blood gave the following results: urea, 14.1 mgs.; uric acid, 2.1 mgs., and creatinine, 1.3 mgs--which are normal figures. This man showed no evidence of salt and water retention. Therefore, we naturally came to the conclusion that the albumin and casts in this patient's urine were the result of passive congestion of the kidneys, and not of nephritis.

CASE III.—This man was fifty-eight years old. He had had chronic interstitial nephritis for years. One week previously uremia developed. His blood pressure was 228 and 170. His blood contained 81.6 mgs. of urea, 5.4 mgs. of uric acid, and 4.2 mgs. of creatinine per 100 c. c. of blood. His blood pressure was 180 and 145, and examination of his blood gives the following results: urea, 32.3 mgs.; uric acid, 4.4 mgs., and creatinine, 2.7 mgs. These estimations give an accurate account of the improvement in kidney function, and enable us to give a good prognosis, so far as the present uremic condition is concerned. If, however, the creatinine had passed the 5 mg. point, we could have foretold an early fatal outcome.

CASE IV.—This lady was a school teacher, seventy-five years of age, who had enjoyed unusually good health up to about two or three months ago, when she began to have insomnia, nervousness or extreme irritability, roaring in the head, and frequent headaches. Her heart was slightly hypertrophied, her arteries were only moderately sclerosed. Four weeks ago the blood pressure was 210 and 182; the urine contained neither albumin nor casts, and the blood contained 15.0 mgs. of urea, 1.6 mgs. of uric acid, and 1 mg. of creatinine. With such facts in her history we cannot very well accuse the kidneys of causing the high blood pressure. Since a rather pronounced intestinal toxemia had been overcome, her blood pressure had fallen considerably—it is now 150 and 120. She feels excellently. Her blood today contains: urea, 14 mgs.; uric acid, 1.9 mg., and creatinine, 1.2 mg. to the 100 c. c.

CHARACTERISTIC BLOOD CHEMICAL FINDINGS.

	Total N.	Urea N.	Uric Acid	Creatinine	Sugar
In	Mgms. in	100. c.c.	of Blood		Per Cent.
Normal	25.- 30.	12.- 15.	1. - 3.	1. - 2.5	0.08-0.12
Chronic Nephritis	30.- 80.	15.- 50.	1. - 4.	1. - 3.	
Uremic Nephritis	120.-350.	80.-300.	4. -15.	4. -34.	0.10-0.20
Eclampsia	Practically no increase.				
Acute Intestinal Obstruction	75.-125.	45.-100.			
Bichloride Poisoning	30.-100.	15.- 75.	2. -10.	1.5- 7.	
Acute Nephritis (some cases)	30.-100.	20.- 80.	1. -12.	1. - 7.	
Thermic fever	25.-100.	15.- 80.	1. -15.	1. - 6.5	
Mild Diabetes					0.15-0.30
Severe Diabetes					0.30-1.10
Renal Glycosuria or Renal Diabetes					0.08-0.12
Gout			3.5- 6.		
Rheumatism (uncomplicated			1. - 3.		

CASE V.—The only other case which I will cite is that of a truckman, twenty-nine years old, who complained of frequent urination, extraordinary thirst, weakness, and a loss in weight of thirty-two pounds in the last two months. Four days ago, this patient's urine contained seven per cent. sugar, and his blood contained 0.31 per cent. sugar. Since that time he has been fasting. The urine contained only a trace of sugar—which finding led us to expect the urine to be sugar free tomorrow. When a diabetic patient's urine is sugar free, we are accustomed to consider the patient in good condition—but such a supposition is not always true, as the subsequent history of this patient illustrates: December 17—Urine, 7 per cent. sugar; blood, 0.31 per cent. sugar. December 21—Urine, trace of sugar; blood, 0.195 per cent. sugar. December 23—Urine, no sugar; blood, 0.18 per cent. sugar.

The blood sugar determination showed us that this patient needed further dietary restrictions, even after the urine was sugar free, in order to bring his blood sugar to a figure more nearly normal. And estimations of his blood sugar will also be of much greater value than urinary examinations, in the dietetic management of this case.

CONCLUSIONS.

We must keep in mind also that every case of continuous glycosuria is not necessarily a case of diabetes mellitus. Occasionally, we see a case of that interesting condition known as renal glycosuria, in which the blood sugar remains normal under various dietetic conditions, and in which the urine contains considerable sugar. It is very clear, therefore, that a study of the blood sugar is necessary to differentiate a mild case of diabetes mellitus from a case of renal glycosuria.

CANDLER BUILDING.

Bacteriology and Pathogenesis of Pneumonia*

By RUSSELL L. CECIL, M. D.,
New York.

Practically speaking, there are only three bacteria that are actively concerned in the etiology of pneumonia—pneumococcus, streptococcus, and the influenza bacillus. Friedländer's bacillus, Staphylococcus aureus, meningococcus and other microorganisms are occasionally responsible for this disease, but they constitute such a small percentage of the whole that they must be looked upon as rarities.

The pneumococcus is the cause of lobar pneumonia. Dochez and Gillespie have classified pneumococci into four groups on the basis of their biological characteristics. Thus, all strains of Pneumococcus Type I cross agglutinate and cross protect. The same with groups II and III. Group IV is the heterogeneous or wastebasket group, and is composed chiefly of unrelated strains which do not fall into the other three groups. The first three groups are known as the fixed types of pneumococcus. They are highly parasitic as a rule, and rarely occur in healthy mouths. The strains that compose group IV are less virulent than the fixed types and are found in fifty per cent. of healthy mouths. The mortality rate for the fixed types of pneumonia average thirty to thirty-five per cent. For Type IV pneumonia the rate is much less—ten to twenty per cent.

At the time the studies on pneumococcus types were carried out at the Rockefeller Institute, the fixed types were responsible for about seventy per cent. of all lobar pneumonias, the remaining thirty per cent. being caused by the group IV strains. During the two big epidemics of influenza this proportion was considerably upset by the relative increase in Type IV pneumonias, but it is interesting to note that during the present winter, in 133 cases of pneumococcus pneumonia typed at Bellevue Hospital, the distribution has been as follows:

Pneumococcus Type I	56 or 42 per cent.
Pneumococcus Type II	30 or 23 per cent.
Pneumococcus Type III	17 or 12 per cent.
Total,	103 or 77 per cent.
Pneumococcus Type IV	30 or 23 per cent.

It is clear from these figures that the disturbance in the incidence rate produced by the influenza epidemic was only temporary, and that the incidence of the various types of pneumococcus pneumonia is approximately the same now as it was before the epidemic of influenza occurred.

The streptococcus is the organism most frequently found in bronchopneumonia. Here again we must classify into the hemolytic and viridans groups. Streptococcus hemolyticus causes a severe form of lobular pneumonia frequently complicated by multiple abscesses and empyema. Streptococcus viridans is frequently recovered from the small patches of lobular pneumonia discovered at autopsy in cases of chronic systemic disease. Apart from this association with terminal bronchopneumonias, however, the Streptococcus viridans produces a mild form of pneumonia, the mortality rate being less than ten per cent. It is rarely complicated by empyema. It should be emphasized that both types of streptococcus pneumonia occur as a complication or sequel to some preceding disease or injury. Streptococcus pneumonia is rarely a primary disease. During the war the hemolytic streptococcus attained such a high degree of virulence that it appeared in some instances to excite a primary pneumonia. Such cases, however, were exceptions to the rule.

Ordinarily streptococcus and Pneumococcus Type IV, being common inhabitants of the healthy mouth, are the infectious agents in pneumonias secondary to some previous infection such as influenza, or following operation and traumatic injuries. Such pneumonias are autogenous infections and are to be distinguished from lobar pneumonia due to pneumococci of the fixed types where the exciting agent comes from without the body, usually from a carrier or some other case of pneumonia. Lobar pneumonia of this variety might justly be called a contagious disease.

The influenza bacillus also produces a characteristic type of pneumonia, best exemplified by the nodular hemorrhagic pneumonias so frequently seen during the big epidemic. Unfortunately for the pathologist this organism rarely occurs in pure culture, so that it is often difficult to say just what part of the process is due to the influenza bacillus and what part to the other bacteria present. A study, however, of the occasional cases of pure Bacillus influenzæ pneumonia and comparative studies on experimental Bacillus influenzæ pneumonia in monkeys indicate that this microorganism is capable of setting up a bronchitis and bronchiolitis with peribronchial infiltration; in other words, a true bronchopneumonia with hemorrhage and edema, sometimes succeeded by emphysema and bronchiectasis in the later stages.

In this short paper I will not attempt to describe the rarer forms of pneumonia. The Friedländer bacillus produces a typical lobar pneumonia usually fatal, fortunately rare. Staphylococcus aureus pneumonia is another unusual form, described by Chickering as a purulent bronchopneumonia with abscesses. Like Friedländer bacillus pneumonia, it is usually fatal.

THE MODE OF INFECTION.

The pneumococcus, like most other bacteria, attacks the human host through the nose or mouth. The mere presence of virulent pneumococci in the pharynx is not sufficient, however, to excite a pneumococcus pneumonia. It is probable, therefore, that in most cases of primary pneumonia the bacteria reach the trachea through the inspired air. Recent experiments indicate that lobar pneumonia is bronchiogenic in origin. The constant production of the disease by intratracheal injection and the constant failure to produce it by subcutaneous or intravenous injection are believed to be conclusive evidence that infection in lobar pneumonia takes place by way of the respiratory passages, rather than through the blood stream. The latter conception has apparently depended upon the clinical observation of cases in which the pneumococcus was shown to be present in the blood at the time of onset of clinical symptoms of pneumonia, or in occasional instances before the clinical symptoms of pneumonia had appeared. That the interpretation of this observation as indicative of the hematogenous origin of lobar pneumonia is incorrect is established by the fact that in the majority of instances in pneumonia experimentally produced by the intratracheal injection of pneumococcus, the organisms have appeared in the blood stream within from six to twenty-four hours after injection, frequently before clinical evidence of pneumonia or elevation of temperature has developed.

---

*Read before the Medical Association of the Greater City of New York, February 21, 1921.

When a monkey is injected intratracheally with virulent pneumococci, and killed a few hours later, it can readily be demonstrated that in experimental pneumonia at least the initial invasion of the lung occurs somewhere comparatively close to the hilum. The earliest inflammatory changes are found here, and microscopical sections taken through this region show pneumococci penetrating the walls of the large bronchi and invading the peribronchial and perivascular lymph spaces. Furthermore, sections from the same lungs taken nearer the periphery show no pneumococci in the lumina of the bronchioles or alveoli, but they may be present in large numbers in the alveolar walls.

It is quite clear, therefore, that invasion and spread of pneumococci in the lung in lobar pneumonia is by way of the perivascular, peribronchial and septal tissue and lymphatics, and that the alveolar structure is primarily infected by spread of the pneumococci from the grosser framework of the lungs into the alveolar walls. With further advance of the process to the stage of hepatization pneumococci pass out from the alveolar walls into the alveolar spaces together with the exudate. Although by no means an absolute rule, hepatization usually occurs first in the posterior and upper parts of the lower lobes, in the lower part of the middle lobe, and in the lower and posterior parts of the upper lobes. This distribution in no way precludes early extension of the consolidation as far as the pleura, since the pleura is comparatively near the large bronchi and vessels in the part of the lobe proximal to the hilum. As the disease progresses, hepatization spreads to the distal portions of the lobe until complete or nearly complete lobar consolidation has occurred.

Experiments with Streptococcus hemolyticus on monkeys indicate that the mode of infection in streptococcus pneumonia is similar to that in pneumococcus pneumonia. The infection is bronchiogenic and primarily affects the interstitial framework of the lung. The reaction of the tissue to the streptococcus is different, and, therefore, the pathological picture is different, but the mode of infection is apparently the same for the two infections.

Coming now to the influenza bacillus, a different mechanism appears to be at work. In Bacillus influenzæ pneumonia the infection travels down the bronchial tree into the bronchioles and subsequently involves the neighboring alveoli by contiguity. Influenza bacilli are present in large numbers in the bronchioles and to a less extent in the adjacent alveoli. They are rarely found in any part of the interstitial tissue, and, as MacCallum has pointed out, the lymphatics are noticeably free from involvement in Bacillus influenzæ pneumonia. This may explain why the influenza bacillus rarely invades the blood stream. The influenza bacillus lacks the invasive character possessed by the pneumococcus and streptococcus, consequently the lesions produced by this organism are focal, while those produced by pneumococcus and streptococcus involve extensive areas. The influenza bacillus, growing in a sense outside of the body, injures chiefly contiguous parts, probably by means of toxic substances which it secretes. The pneumococcus and streptococcus, invading the lymphatics, reach all parts of the lung and excite a massive lesion. So much, then, for the mode of infection in pneumonia.

The questions are often asked: What is the practical value of information as to the bacteriology of a case of pneumonia? What help will it be to the general practitioner to know the type of infection with which he is dealing?

First of all, an accurate bacteriological examination of the sputum is necessary before serum treatment can be rationally applied. The pneumococcus must be definitely demonstrated and the type determined. If Pneumococcus Type I is present, the administration of Type I serum is to be seriously considered. If some other type is demonstrated, it is obviously useless to employ the serum.

In the second place, a bacteriological knowledge of pneumonia greatly aids the physician in prognosis and in the general care of the case. If pneumococcus is found, he has a right to expect a lobar pneumonia. If Pneumococcus I, II, III, are reported, he knows that he is dealing with one of the more virulent forms of pneumococcus pneumonia and is more guarded in his prognosis than he would be if Pneumococcus IV is present. He knows that a Friedländer bacillus nearly always means death. He knows that in case of Streptococcus hemolyticus he must watch the circulation and be on guard for abscesses and empyema. On the other hand, if nothing but Streptococcus viridans is present in the sputum, the prognosis is excellent. The influenza bacillus will only rarely be found in pure culture, but its presence in large numbers should be considered significant. In such cases there is danger of slow resolution and chronic bronchitis with occasionally emphysema and bronchiectasis.

In cases where resolution is delayed the sputum should always be searched for tubercle bacilli. The bacteriological examination of the sputum in pneumonia can be accurately made in many cases by direct plating of the material on blood agar. This method, however, is slow, and for that reason undesirable. The mouse method is undoubtedly the quickest and at the same time the most reliable method of determining the type of organism in pneumonic sputum. By this method a positive diagnosis can usually be made in twelve to eighteen hours. If pneumococcus is present, an agglutination test can be performed at once on the peritoneal exudate and the type determined. If the infectious agent be streptococcus or Bacillus influenzæ, or even Friedländer's bacillus, the mouse exudate will indicate it, for the peritoneum of the mouse is an ideal culture medium for all of these bacteria.

The Krumwiede method of examining the sputum is quick and reliable, but gives information only concerning the three fixed types of pneumococcus. The Avery method is accurate when one uses clean sputum in which the infectious agent is present in practically pure culture. Unfortunately, specimens of this character are not often obtained.

Where sputum is not obtainable, the diagnosis of Pneumococcus Types I, II and III pneumonia can sometimes be made very promptly by a precipitin test on the urine. Positive reactions are usually obtained on severe cases only.

Other and less frequently available methods of making the diagnosis are by blood culture, lung puncture, examination of pleural and spinal fluid, etc. Examination of the sputum, however, remains the method of choice.

The time has come when medical men should think and speak of pneumonia in terms of the causative agent, rather than in terms of anatomy or pathology. Important as the latter are, it would seem that the character of the infectious agent in pneumonia is of more significance than the location or the type of consolidation. Furthermore, it is difficult at best to make accurate distinctions between lobar and lobular pneumonia, or to say in every case just how many lobes are involved in the process. On the other hand, we now have at our disposal accurate and rapid methods for the determination of the infecting organism in pneumonia, and these methods are available to all practitioners, certainly to all practitioners in the larger cities. Would it not therefore be a step in advance to speak less of lobar and bronchial pneumonia, and more of pneumococcus, streptococcus and bacillus influenza pneumonia? I believe that progress in the specific treatment of pneumonia is in large measure dependent upon the adoption of such a point of view.

33 East Sixty-first Street.

The Willems Treatment of Joint Lesions*

By HARRY COHEN, M. D.,
New York,

Attending Surgeon Peoples Hospital.

The treatment of wounds and injuries involving joints has always been of considerable concern to the surgeon. The reasons for this are well known, and may be classified as follows:

1. Relatively high mortality following joint suppuration.
2. Frequent necessity for amputations.
3. Frequent necessity for resections.
4. Poor functional results, especially ankylosis or flail joints, the latter occurring occasionally when resections have been performed.

Ankylosis was so often the end result that Stimson (1) described the surgeons' dread of this condition as ankylophobia. With the many advances in surgery as a consequence of the recent war, joint surgery has kept pace and surgical joints are now treated with new enthusiasm and with excellent results.

There are many methods of treatment of joint conditions, but all can be classified in the following two groups:

Immobilization.—This is the oldest method of therapy, and was universally advocated until 1917. The rule has been complete immobilization for weeks or occasionally months. The treatment was modified later by mechanotherapy, at first applied after many weeks and more recently after one or two weeks of immobilization.

Mobilization.—To Willems (2), of Ghent, Belgium, belongs the credit for introducing the second form of treatment. He applied this method for many years, but the war provided him with the opportunity for treating these cases on an extensive scale. We are also indebted to him for giving us thorough description of this method.

The following are the various forms of joint lesions amenable to this treatment:

CLASSIFICATION OF SURGICAL JOINTS.

Traumatic arthritis:
  a. Hydrarthrosis.
  b. Hemarthrosis.
  c. Intraarticular fractures (simple and compound).
  d. Intraarticular foreign bodies as bullets, etc.
  e. Arthritis with loss of tissues both soft and bony; (simple or infected).
Suppurative arthritis:
  a. Staphylococcus.
  b. Streptococcus.
  c. Diplococcus, etc.

Briefly stated, the Willems treatment consists of two steps, the operative and the postoperative or immediate active mobilization of the joint.

OPERATIVE TREATMENT.

1. In simple arthritis puncture of joint is the indicated treatment.

2. Joints containing foreign bodies require arthrotomy with removal of all foreign material. Do not irrigate the joint cavity in these cases. In 1 and 2 the joints must be closed up tightly immediately.

3. In suppurative arthritis perform arthrotomy and leave the joint wide open.

4. Rules for arthrotomy:

a. Long unilateral incision constantly kept open when secretion is scant, and when the elbow is involved, external incision only.

---

*Read before the Beth Israel Hospital Alumni Association, February 24, 1921.

b. Bilateral longitudinal incisions into joints—in profuse discharge.

c. Do not make a U incision.

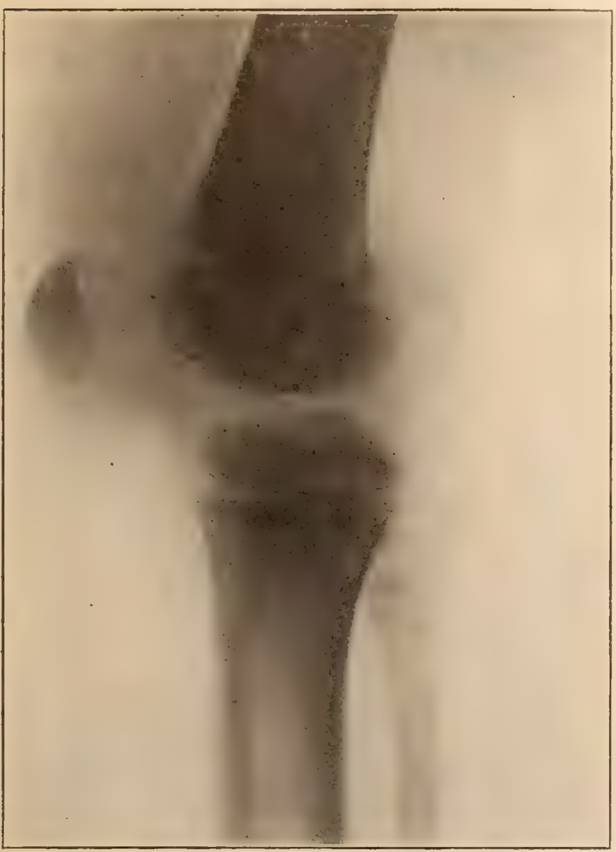


FIG. 1.—Case 1a, H. H., Suppurative arthritis of the knee joint. Lateral view. Note distance of patella from femur.

d. Drains must never be inserted into a joint cavity.

POSTOPERATIVE TREATMENT.

1. Immediate (as soon as patient is out of ether).
2. Active (by patient himself).
3. Continuous and uninterrupted (both day and night).
4. Maximum excursions early.
5. Passive motion not allowed.
6. Best performed under supervision of a nurse or attendant.
7. Goal: Normal physiological function of joint.

The summary of results following the mobilization of suppurative joints are:

1. Complete drainage of joints.
2. Apyrexia.
3. Limitation of infection to the synovial membrane, and
4. Elimination of postoperative muscular atrophy.

The contraindications to this form of treatment are:

1. The displacements of fragments due to mobilization.
2. Complete destruction of ligaments and articular capsule at the time of the traumatism.

REFERENCES TO LITERATURE.

McWilliams and Hetzel (6) make a comparison of eighty-two cases treated by immobilization with a hundred cases treated by the Willems method. The former they describe as yielding melancholy results, and of the latter conclude: No deaths, no amputations, one resection, and only two stiff joints.

Mumford (9) describes a number of cases treated by Willems's method with unfailing good results. At the first treatment of suppurative joints he washes out the joint with ether. He also lays emphasis on sewing up the capsule. A moderate amount of infection can be taken care of by the synovial membrane just as by the pleura and peritoneum.

Duval (10) cites statistics of cases under his care and makes the following observations: In 1914 and 1915 his death rate was twenty-seven and six tenths per cent., amputations thirty per cent.; in 1916, 1917 and 1918, using Willems's treatment his death rate was reduced to nine tenths per cent. and amputations two and eight tenths per cent. He also calls attention to the resistance of joints to infection, and states that the synovial membrane possesses a bactericidal power. In his early studies he found bacteria in all the traumatized tissues, except in the synovial membrane and fluid. He obtained perfect functional results in cases of comparatively extensive bone destruction.

Pool and Jopson (11) also call attention to the resistance to contamination and infection which the synovial membrane of a joint offers. They, too, emphasize the importance of suturing the synovial membrane. They differ from Willems in that they substitute early for immediate active mobilization; that is, they wait a variable time before beginning

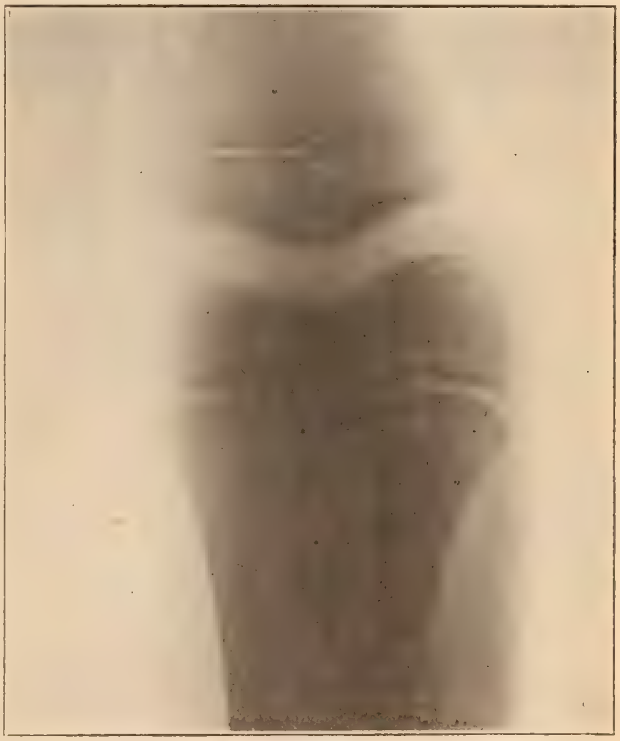


FIG. 2.—Case 1b., Anteroposterior view. Note distance between femur and tibia.

mobilization. Also in infections "the wound should be Carreled." They conclude that in severe or long standing infections, especially with bone involvement, their treatment has not proved satisfactory; also that Willems's treatment offers the best chance for early and complete restoration of function.

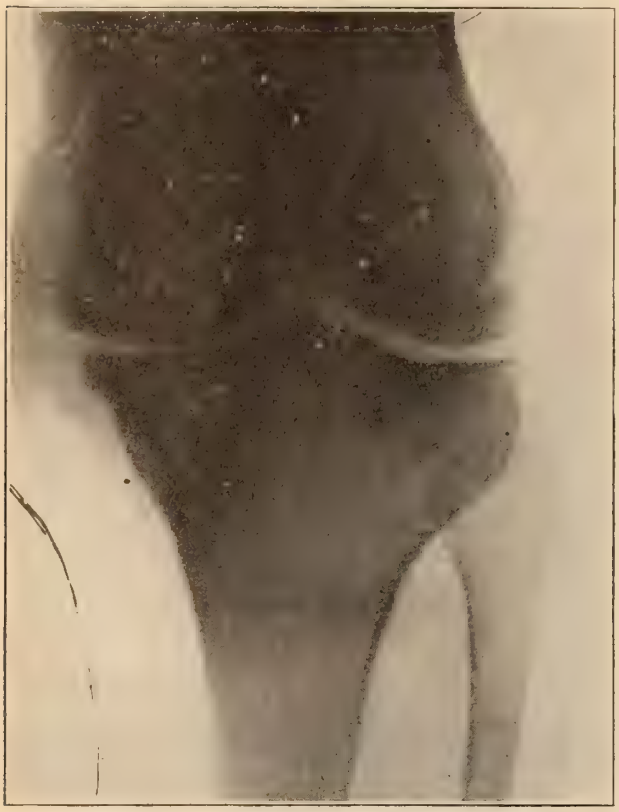


FIG. 3.—Case 14, C. O., Large bursa at the inner aspect of the right knee communicating with the knee joint cavity. This joint also shows evidence of chronic arthritis.

Individual case reports are numerous. Lee (12) reports a case in which he excised a fractured scaphoid from the wrist, and, with Willems's treatment, obtained an excellent functional result. On the other hand, Cotte (13), who treated seventeen surgical joint cases by this method, reports unfavorable results.

By contrast with the foregoing reports on Willems's treatment one of the earlier methods of treatment of suppurative joints was resection. Moore (14) describes the result obtained in eleven primary resections of the elbow joints, in ten of which a flail joint resulted. He concludes that the uselessness of the limb is almost in direct proportion to the amount of bone removed.

Another method of treating suppurative joints is described by Churchman (15). This consists of the irrigation of these joints with gentian violet. Up to the present I have had no experience with this treatment.

My experience with the Willems treatment comprises sixteen cases. Of interest, however, is the fact that the treatment has been made applicable to civil practice. The cases include one suppurative arthritis of the knee joint, one dislocation of the shoulder, three dislocations complicated by fractures, six intraarticular fractures, two fractures near joints, and three chronic bursitis cases. In the case of suppurative arthritis of the knee, Willems's treatment has been followed without any modification; the same with the dislocation cases. In the fractures, however, the treatment was slightly modified to early (two days to a week) instead of immediate mobilization. The results in all the cases have been a complete and early return to the normal function and appearance of the joints.

CASE REPORTS.

CASE I.—Suppurative arthritis of the knee joint. H. H., aged seven, referred by Dr. M. Isenberg, was admitted to the Peoples Hospital, July 26, 1920. Twenty-three days before admission he fell on a broken bottle, the glass penetrating the right knee joint. The knee gradually increased in size and symptoms of severe knee inflammation, including high fever, developed. On examination there were all the evidences of acute inflammation and fluid in the joint. In addition, a healed wound was visible along the outer border of the patella. Röntgenograms showed the joint distended with fluid. He was taken to the operating room and an incision was made over the old cut. On entering the knee joint a large amount of thick, yellowish pus was evacuated. The joint was washed out with Dakin's solution, and immediate active mobilization was commenced. He was permitted to leave the bed on the fourth day, and encouraged to walk and climb stairs. The result was a complete cure in three weeks.

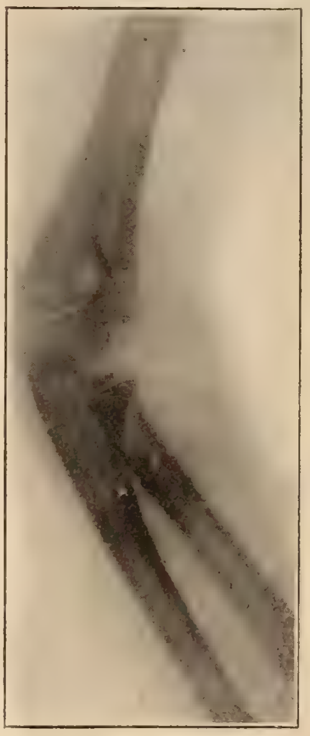


FIG. 4.

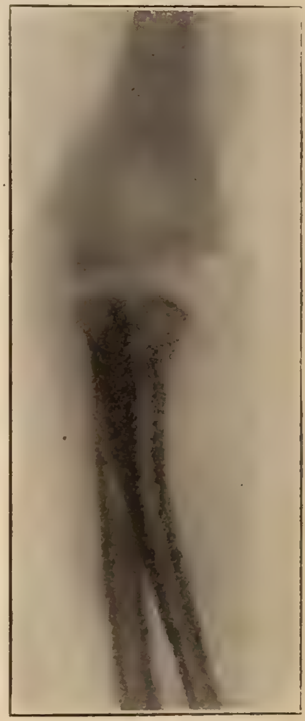


FIG. 5.

FIG. 4.—Case 6a, L. S., Intracapsular fracture through external condyle of the humerus. This radiograph also shows the displacement of the fragment into the joint cavity on mobilization.
FIG. 5.—Case 6b, Same joint on extension.

CASE II.—Subcarocoid dislocation of left humerus. D. DeM., aged thirty-two, referred by Dr. H. Reinstein on August 18, 1920, sustained a subcarocoid dislocation of left humerus. The dislocation was reduced under anesthesia and immediate active mobilization followed. Complete cure in two weeks.

Case III.—Intracapsular fracture, head of humerus. H. S., aged twenty-four, injured shoulder by fall three days before. Röntgenograms on March 30, 1920, showed a chip of bone a half inch long, torn from the head of the humerus; intracapsular. Immediate active mobilization. Originally very little motion. After Willems's method, complete restoration of function in three weeks.

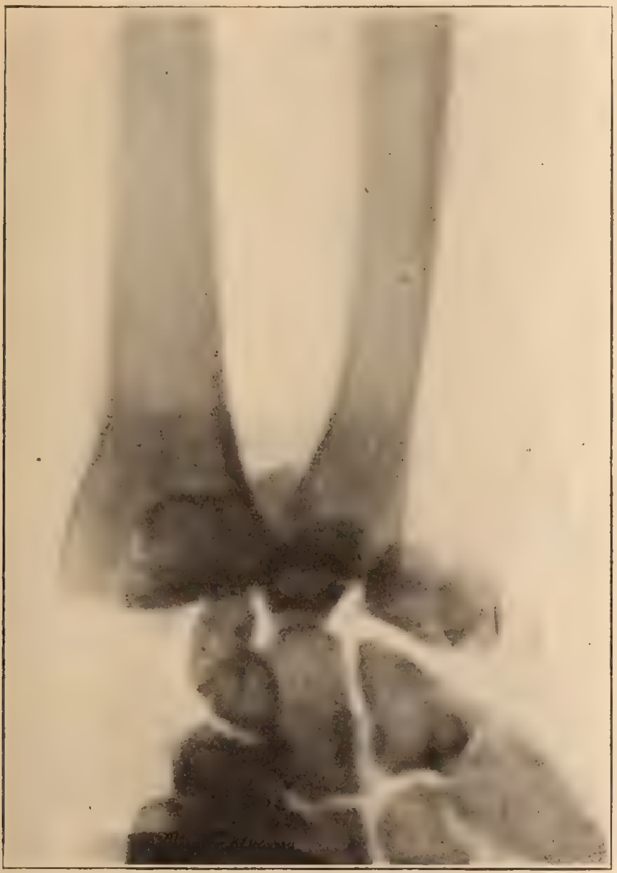


Fig. 6.—Case 12a, N. S., Fracture of the styloid process of the radius with anterior dislocation of the wrist. Before reduction.

Case IV.—Dislocation of elbow and fracture of the coronoid process of ulna. Dr. M. G., aged twenty-seven, referred by Dr. A. Goodman, July 16, 1919, with a backward dislocation of elbow and fracture of coronoid process of ulna. Reduction followed by Willems's treatment. Cure in four weeks.

Case V.—Intracapsular fracture, lower end of humerus. D. B., aged fifty, referred by Dr. D. J. Hyman, February 12, 1920. Intracapsular fracture, lower end of humerus. Willems's treatment. Cure in five weeks.

Case VI.—Intracapsular fracture through external condyle of the humerus with an epiphyseal separation. L. S., aged ten, referred January 15, 1921, by Dr. H. Goldstein, was injured two weeks previously. Röntgenographic report was an intracapsular fracture through external condyle of the humerus with an epiphyseal separation. Willems's treatment commenced, but discontinued owing to the displacement of the fragment into the joint. Extension splint applied for a week and then again mobilization. Cure in seven weeks.

Case VII.—Comminuted fracture of the left wrist. J. G., aged forty-eight, fell from chair November 13, 1920, and sustained a comminuted fracture of the left lower end of radius and ulna. Willems's treatment. Cure in five weeks.

Case VIII.—Fracture of left olecranon. L. I., aged six, referred by Dr. D. J. Hyman, September 26, 1920, with a fracture of left olecranon, marked swelling of elbow joint, and limited motion. Under anesthesia fragment replaced. Willems's treatment. Cure in four weeks.

Case IX.—Compound fracture of lower end of left forearm. M. W., aged fourteen, referred by Dr. Joseph Diamond, August 28, 1919, with a compound fracture of lower end of left forearm. The bones were restored to the normal position and both elbow and wrist joints were mobilized. Cure in two months.

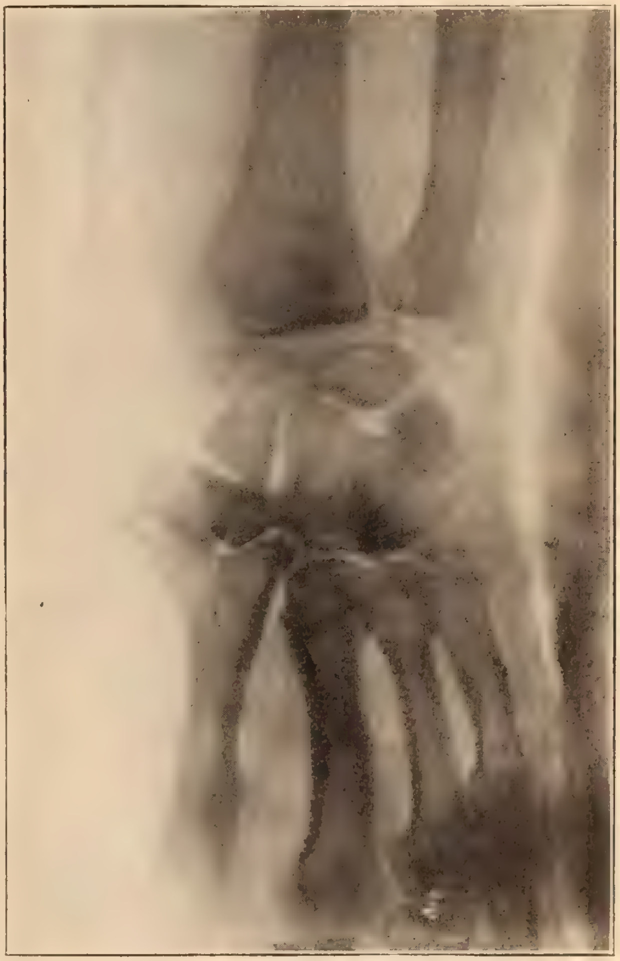


Fig. 7.—Case 12b, After reduction.

Case X.—Fracture, lower end of radius and ulna. I. B., aged twelve, June 19, 1919, by Dr. D. J. Hyman, with a fracture of the lower end of radius and ulna of right forearm. Wrist joint mobilized. Cure in four weeks.

Case XI.—Fracture of the lower end of the radius with an outward dislocation of the wrist. W. P., aged thirty-four, admitted to the Peoples Hospital, January 31, 1919, with an oblique fracture of the lower end of the radius with an outward dislocation of the wrist. Under anesthesia the fracture and dislocation were reduced and early mobilization instituted. Normal functional result in four weeks.

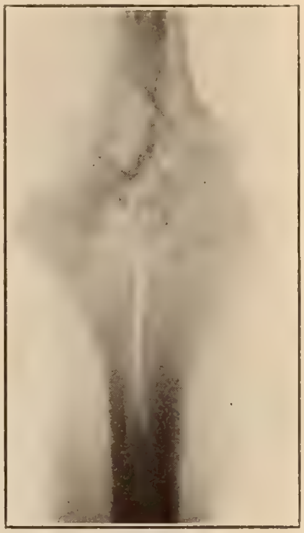


Fig. 8.—Case 5, D. B., Intracapsular T fracture lower end of humerus.

Case XII.— Fracture of radius and anterior dislocation of wrist. N. S., aged twenty-four, admitted to the Peoples Hospital, December 24, 1918, with a fracture of the styloid process of the radius and an anterior dislocation of the lower fragment and wrist. After reduction, early mobilization. Cure in four weeks.

Case XIII.—Fracture of the cuneiform of the right wrist. I. Z., aged eighteen, fell from a motorcycle, August 4, 1918. Radiograph showed a fracture of the cuneiform of the right wrist. Early mobilization. Cure in four weeks.

Case XIV.—Bursa under the semimembranosus muscle connected with the joint cavity. C. O., aged fifty-three, admitted to the People's Hospital, December 2, 1919, with a large mass at the inner aspect of the right knee. At operation this proved to be a large bursa under the semimembranosus muscle connected with the joint cavity. The bursa was excised and the joint was mobilized. Cure in three weeks. In this case there was röntgenographic evidence of chronic productive arthritis of all the joints, and immobilization was contraindicated.

Case XV.—Chronic bursitis. S. S., aged twenty-four, referred by Dr. B. Berger, September 3, 1920, and

Case XVI.—H. G., aged thirty-two, referred by Dr. H. Mantel, January 19, 1920; both bursæ were large over the olecranon processes. Treatment consisted of excision and mobilization.

CONCLUSIONS.

1. Willems's treatment is applicable to civil practice as well as to hospital practice.
2. Its application has resulted in a rapid return of normal function and obviated ankylosis.

221 Second Avenue.

Willems Treatment of Knee-Joint Injuries *

A Plea for Its Wider Application

By EUGENE H. EISING, A. M., M. D.,
New York,
Visiting Surgeon to Sydenham Hospital, and Hospital for Joint Diseases.

Within the memory of most of us, the septic knee joint was looked upon as one of the most fatal surgical conditions the surgeon had to deal with. Not only was it fatal to life, but the best result one even hoped for was a result fatal to the function of the joint, that is, an ankylosed knee joint. Prior to about 1880 no surgeon would hesitate to amputate a limb in which the knee joint was found to be acutely infected from a penetrating wound, as no method of treatment had proved to be of any avail.

About this time a radical method was introduced, attempting to save life and limb, by boldly making a transverse incision across the joint, raising the patella and reflecting it upwards, opening the joint and all of its recesses in such a manner that with the knee flexed the entire joint lay open. This method which remained in vogue until comparatively recent times was followed in a good percentage of cases with a subsidence of the constitutional symptoms of sepsis, and a gradual clearing up of suppuration in the joint. The exposed joint cavity became thickly covered with granulations, and at some subsequent time, resting upon the judgment of the surgeon, the leg was brought into a position of extension, and after months of care the wounds healed and the knee joint was ankylosed. Frequently a late resection was done, in order to bring to an end what appeared to be an interminable convalescence.

The enormous mass of surgical material which was brought to the hands of surgeons through the great war provided an opportunity for study and development of surgical methods, which in certain spheres has become completely revolutionary. Perhaps in no chapter is this more true than in the treatment of septic and aseptic injuries of the knee joint.

It was the Belgian surgeon, Willems, who in 1915 advocated and began the treatment which now bears his name, as applied to joint surgery. Willems applied the principles of debridement and primary suture to joints, as he had seen it employed to other wounds. To this he added (and herein lies his chief claim to originality) the revolutionary principle of almost immediate postoperative active motion. His early results were so astonishingly successful as compared with the older methods of drainage and fixation that he was soon led to lay down the following set of rules for the treatment of penetrating wounds of joints, and of the knee joint in particular:

---

*Read before the Clinical Society of the Hospital for Joint Diseases, March 8, 1921.

THE TREATMENT OF RECENT PENETRATING WOUNDS OF KNEE.

1. X ray, to determine presence of fracture and location of foreign body.

2. Debridement of all damaged tissues surrounding the wound, external to the opening in the capsule of the joint, and removal of all blood clot in fascial planes.

3. Resterilization of all instruments before entering the joint cavity.

4. Removal of lacerated edges of synovial membrane, and opening joint sufficiently to proceed with intraarticular manipulations.

5. Removal of foreign body, clothing, and detached bone fragments. If the foreign body is imbedded it is chiselled away, following the tract to its end and removing all devitalized bone surrounding the tract. Manipulations are completed without putting the fingers in the joint cavity, and as quickly as possible, because exposure and drying of the synovia conduces to ankylosis.

6. The joint is then washed out with nonirritating solution, such as Dakin's, or salt solution, followed finally by flushing with pure ether.

7. The joint capsule is then closed with plain catgut. Unless the effusion into the joint is frank pus, as in neglected cases, the synovial membrane is completely closed, disregarding the length of time that the injury has existed. The tissues external to the closed capsule need not be closed and are better left open, if the injury has existed longer than twelve hours. The external wound is loosely packed, and a dressing applied in such manner as not to interfere with active motion which is soon to be practiced.

8. As soon as the patient is sufficiently out of the anesthetic active motion is begun with the patient still lying in bed. Active motion is repeated every two hours during the day and night, and is considered one of the most important parts of the treatment in order to prevent ankylosis. Any interruption of the active motion sets the patient back and conduces to ankylosis. The active motion is accomplished with astonishingly little pain, and soon disappears entirely.

MANAGEMENT OF THE FRANKLY SEPTIC CASES.

The management of the frankly septic cases, proved so by the presence of pus and by bacterial examination, is conducted in the same manner, with the exception that no attempt is made at primary suture. Neither the capsule nor the extraarticular structures are closed in any part. External and internal incisions open the joint on either side of the patella, and the joint is flushed with Dakin's solution, followed by ether. If tubes are employed at all they should not enter the synovial cavity. The external wounds are lightly packed with gauze. Active motion is begun as soon as the patient is sufficiently out of the anesthetic, and repeated day and night every two hours.

The following day the patient is encouraged to walk without the use of crutches. This of course is not possible in all cases. Drainage is remarkably accelerated by the active motions, and on walking the purulent discharge is further forced out of the joint, the pus literally pouring out of the wound.

The joint cavity is irrigated daily with Dakin's solution. After a week or ten days the discharge becomes serous in character, and the wound may then be sutured.

This remarkable achievement in modern surgery, in saving life and limb, should not rest here, but should open new vistas for the treatment and cure of the more chronic diseases affecting joints. It seems to me that Willems has indicated the future method of treating various joint diseases, and it remains for us to work out the details, as such procedure applies itself to our special work. There are many knee joint conditions that are conservatively treated by means of baking and massage. I have often seen little or no improvement following a protracted course of treatment. I am by no means an advocate of indiscriminate operative interference upon joints, but I have seen cases conservatively treated which from the beginning seemed hopeless by such means.

In other words, the thoughts I wish to convey are the following:

1. Willems has shown that the knee joint may be entered with as much safety, let us say, as the skull.

2. Considerable surgical trauma can be withstood by the knee joint without seriously impairing its function.

3. In the event of infection occurring, we have a method of treating such a joint, with a far greater chance of success.

In civil practice we shall not encounter the same conditions that were met in the war, but the teachings of war surgery should find their application to the surgery met with in times of peace.

35 West Eighty-first Street.

A Study of Orthopedic Surgery from a Psychological Point of View*

By HENRY KELLER, M.D.,
New York.

WHAT IS ORTHOPEDIC SURGERY?

Whitman says that "The student of this subject is especially concerned with the mechanics of the human machine, with its development, with its capacity at different periods of life and under various conditions, and with those affections that lead to deformity or that otherwise impair its usefulness. He is concerned, moreover, not only with the local and immediate effects of disease or disability, but also with its general influence upon the entire mechanism and with its ultimate consequences as well."

As most of the affections with which the orthopedic surgeon has to deal are intimately associated with the locomotor system, it will be in place to discuss at the outset the salient features connected with that system having some bearing upon our discussion. The locomotor system consists of bones held together by hinges or joints, and connected with the rest of the skeleton by numerous muscles, the latter of which are the immediate source of all the energy the body can use to move itself and other things. This function of the muscle depends upon its connection with the central nervous system through its nerve endings in virtue of which it is capable of being acted upon through the reflex action.

---

*Read before Medical Association of the Greater City of New York, March 21, 1921.

REFLEX ACTION.

The reflex action consists of the reflex arc and spinal reflex movement.

Reflex arc.—According to the neuron theory the simplest reflex arc must consist of two neurons—the sensory neuron, whose cell body lies in the sensory ganglia of the posterior roots or of the cranial nerves, and a motor neuron, whose nerve cells lie in the anterior horn of the gray matter of the cord or in the motor nucleus of a cranial nerve. . . . The sensory fibres entering through the posterior roots may pass upward through the entire length of the cord to end in the medulla, and on the way give off a number of collaterals, or they may make connections with intermediate cells, which in turn are connected with one or more motor neurons. In that way it is possible for a sensory fibre which carries an impulse that eventually reaches the cortex of the cerebrum to connect itself through its collaterals with motor nuclei, in the cord or medulla, and thus at the same time give rise to involuntary and even unconscious reflexes.

Spinal reflex movement.—The reflex movement obtained from the spinal cord or from other parts of the central nervous system may be divided into three groups by characteristics that are physiologically significant. 1. Simple reflexes—those in which a single muscle is affected, i. e., winking reflex caused by contraction of orbicularis palpebrarum. 2. Coordinated reflexes—those in which a number of muscles react with their contraction, so graduated as to time and extent as to produce an orderly and useful movement. 3. Convulsive reflexes, such as are seen in spasms, in which a number of muscles, perhaps all the muscles, are contracted convulsively without coordination, and with the production of disorderly and useless movements.

SPINAL REFLEXES IN THE MAMMALS.

Howell points out the important fact that according to the degree of the development the control of the muscles is assumed more and more by the higher portions of the nervous system, and the spinal cord becomes less important as a series of reflex centres, its functions being more dependent upon its connection with the higher centres.

ASSOCIATION FIBRES IN THE CORTEX.

Flechsig as a result of his study of the embryo brain comes to the now generally accepted conclusion that, in the brain of the newly born infant, while the fibres running up from the lower centres to the cerebral hemispheres and those running from the cortex to the pyramidal tract are already developed, the association fibres, that is to say, the fibres running in the cerebral hemispheres from centre to centre, are not developed, but are established in the individual after the brain had entered upon its duties and its functional activities. Morgan observes that this anatomical observation accords with the psychological view that the association of ideas is a matter of individual establishment, and is not, at any rate in its details, a matter of inheritance.

The functions of these association centres and association fibres are protective and connective. They compel the different parts to act together and on the right occasion they enable the parts to respond to the external world. In that way the nervous system enables the organism to act as a unit and not as mass of separate organisms.

Before proceeding with the practical application of the aforementioned to orthopedic surgery it is essential that we take up some important psychological principles with reference to the locomotor system.

Kinesthetic sensations.—In addition to the traditional five senses of man, many new sense qualities and sense organs have been discovered in the last few years. Most important of these is the sensation complex that tells us of the movement of the body of weight and resistance. When one moves the hand, one knows at once the amount and direction of the movement even with the eyes closed. Investigation has shown that the sensations come from organs in the muscles and tendons. When the muscle is contracted the cells of the muscle become shorter and thicker. This change exerts pressure upon and stimulates the sensory ends between the muscle cells. For example, when the arm is moved there is a contraction in one set of muscles and a relaxation in the opposing set. In one set of muscles the sense organs will be compressed, in the other set the pressure will be relaxed. Each movement and each position has a complex of increasing and decreasing stimulation which is characteristic for that movement in quality and intensity.

Not only are the sensations of these tissues aroused by movement but they also form the basis of our perception of the movement of body and limbs. The muscles supply the sensations of physical fatigue, from the tendons we get a sensation of effort when pushing or pulling, and of strain when passively resisting, while from the joints we have the sensation of pressure. Muscle and joint yield sensations which resemble those of pressure on the skin, while muscle and tendon yield sensations which are like those of pain from the skin.

These various sensations sooner or later become intimately bound up with the other sensations of the body through its association fibres, and take an honorable place in the field of ideation or consciousness through the association areas in the cortex of the brain. As a result of that intimacy they can affect the other senses and be affected by them.

Kinesthetic equivalents.—We cannot perform an action without having in the mind at the time the appropriate thought or image or memory to suggest the action.

This dependence of action upon the thought which the mind has at the time is conclusively shown in certain patients having partial paralysis. These patients find that when the eyes are bandaged they cannot use their limbs and it is simply because they cannot realize without seeing the limb how it would feel to move it, but open their eyes and let them see the limb, then they move it freely. This, according to Baldwin, leads to the general position that for each of our intentional actions we must have some way of thinking about the action, of remembering how it feels, looks, etc. We must have something in mind equivalent to the experience of the movement. In short, the principle of kinesthetic equivalents expresses the truth that we must in every case have some thought or mental picture in mind which is equivalent to the feeling of the movement we desire to make; if not, we cannot succeed in making it.

Now, though in early life the various movements and other activities are the direct concern of the mind and in that way the body is brought in direct communication with the mind, causing thereby an harmonious association for the welfare of both. As soon as these various activities have been repeated time and again, a habit is formed. The mind then relaxes its vigilance and permits these various organs to pursue their work without constant supervision.

Angell expresses it very beautifully thus: "The earliest objects of our volition are undoubtedly the satisfaction of the simple bodily needs, represented by hunger and protection from the extremes of temperature. Then comes interest in securing control over objects at a distance from us by virtue of learning to move our eyes as will enable us to secure or to avoid particular forms of stimulation. In this manner it occurs that during the very early years we gain command over our more commonly used muscles. We learn to walk, to talk, to write and to read, to reach for objects, to lift them, and to place them where we may desire."

All these muscular accomplishments rest upon what we designate habit. These habits at the outset require the most persistent and careful mental control. After the movements have been performed time and again they tend to become more or less automatic, and after a sufficient number of repetitions they may pass almost wholly out from under the direct guidance of the mind and be carried on by the automatic machinery of the nervous system, thus leaving the mind free to pursue its own further interests.

That these sensations and the normal necessary reflexes are still present in the subconsciousness is proved by the fact that they can easily be recalled to the consciousness, to occupy full attention to the exclusion of all other thought waves. Whenever there is a continuous stream of sensations coming from any particular part of the body having a tendency to be prolonged beyond its habitual time limit or intensity, it has the tendency to disturb the physicomental equilibrium and in that way call the mind's attention to it.

One of these sensations which we as physicians are mostly concerned with is the feeling or sensation of pain, which is a salutary sensation, calling the mind's attention to the presence of the condition giving rise to these continuous stimuli. The mind's response to such stimuli is the attempt to locate the source whence these irritating sensations are coming and interpret their significance. Once it is located, the mind will then tend to inhibit the acts which give rise to these painful sensations, or to draw the subject away from the stimuli which cause them. However, since the mind depends for its correct interpretation upon the neurons which carry these stimuli to the cerebrum it may happen that the source of the irritation may be overshadowed by the rich collaterals and other associating fibres before it reaches the mind, and in that way the mind will be at a loss to properly interpret, with the result that the defense will also be misdirected. Hence, beginning flat feet may at times give rise to severe backache and pains in the upper extremities, without a feeling of undue irritation in the feet.

The response to these irritating stimuli is manifested in various ways according to the location affected, the sole object, as mentioned before, being the inhibition of the act or acts which give rise to these painful sensations, and in that way bring about a restoration of the normal physicomental equilibrium. In the locomotor system the response manifests itself by spasm of the muscle moving the limb, assuming thereby an attitude which tends to relieve pressure sensations in the joint and inhibit also the act of free motion.

The response to these stimuli also depend upon the mental makeup of the patient, if he is a motor or a sensory type, especially in young individuals, also upon the antecedent association fibres formed.

It is interesting to remark in this connection that the Latin races, as well as Hebrews of Russia and Galicia, usually converse with accompanying gesticulation, and have in that way established a perfect communication between the speech centre and the motor centre of the upper extremities. If these suffer from any affection of the arm in need of rest, nothing short of perfect and sure immobilization will ever have the desired effect, for unconsciously their arm muscles move when they speak, even without the patient being aware of it.

There is, however, one difficulty with the inhibitory response taking place whenever a joint is affected. The contracture of the surrounding muscles, which is presumably protective, causes pressure upon the nerve endings in the muscle fibres, and this, in turn, keeps up a constant flow of further irritation to the mind, with the result that it tends to focus the mind's attention upon the local affection, producing thereby a greater spasm and adding to the misery of the patient. In tuberculous arthritis, even in its incipiency, we often find that the accompanying spasm of muscles, night cries and pain are beyond all proportion to the manifest pathological condition present. The only way I can explain it is the explanation given above, namely, that the incoming pain sensation reaching the mind from the involved joint keeps the mind's attention focussed upon it. The mind responds by sending inhibitory impulses to the affected region, producing spasmodic contraction of the surrounding musculature. The nerve ending in these muscles are being pressed upon, and further irritating impulses reach the brain which the mind may or may not interpret correctly, and in that way greater spasm results, causing the mind to be kept constantly on the alert, with accompanying concomitant emotional manifestations, i. e., fear of being moved, restlessness, anger, irritability, etc.

The practical bearing upon treatment that this observation has is the fact that, in order to apply immobilizing apparatus to affect a cure in any diseased joint, it is necessary to first reduce the spasm of the muscle, and in that way one will be in better position to keep the pain sensations from disturbing the consciousness. The best method that I found in doing it is to give the patient an anesthetic so that the spastic muscles relax, and then while the patient is still under the influence of the anesthesia to encase the inflamed joint in plaster of Paris bandages, taking care, however, that the support takes in all the muscles going to that joint from their origin to their insertion. Otherwise these muscles will again go into spasm at the slightest provocation. It is true that there are objections to plaster of Paris or permanent immobilization on account of its being unhygienic, also preventing the patient from indulging in daily ablutions. The advantages, however, of that treatment as to the patient's feelings of well being, after a successful immobilization as described above, is such that it actually outweighs all other considerations.

Another principle worth while remembering, which also belongs to psychology, but has a practical bearing upon our discussion, is the fact that after the actual cessation of the inflowing pain sensations, following proper immobilization of the limb, there may still linger in the mind the memory of these sensations for a while, sometimes as long as three or four weeks. This being nothing more nor less than the time necessary for these painful experiences to sink into the subconsciousness and become a part and parcel of our makeup, with the possibility of recall for the sake of prevention of a recurrence, but its recall will be without the present accompanying emotions. The lack of knowledge of the above fact has caused many a surgeon sleepless nights and worrying days. During these weeks the patient's mind can be successfully diverted to other matters, and in that way help to hasten the process of forgetting and restore the patient's physicomental equilibrium.

I cannot leave this important subject of discussion without emphasizing the fact that the interconnection between the kinesthetic sensations and the central nervous system and the latter's prompt inhibitory response to the muscular system surrounding the joints is a salutary one, and not to be taken lightly. Were it not for this quick response the damage caused to a joint before the mind would become aware of it would be such as to endanger the integrity of the joint in question. In locomotor ataxia such condition obtains where the sensations of slight disturbances to the joint do not reach the proper protective centers, and hence it paves the way for a Charcot joint. Reasoning by analogy, diathermy or any other method of deadening the sensory nerve endings and thus relieving the pain of an inflamed or injured point, and then letting the patient go without proper support to the damaged joint is to be discouraged, to speak mildly.

HOW TO UTILIZE THE MENTAL ATTITUDE OF THE CRIPPLE.

This subject is one of the most fascinating in the whole domain of the healing art, but seems to have received scant attention. With the exception of a few scattered remarks here and there no one seems to have paid attention to it.

Ely throws out an important hint when speaking of the child. He states: "The general attitude of the child who is brought for examination is one of suspicion, especially if he has previously been roughly handled, and this attitude must be changed if we would succeed in our task. Once a child's confidence is gained, the rest is easy."

Wallace Blanchard (2) remarks that "A primary consideration in the end results of any operation is the effect on the mental condition of the patient." He also calls the reader's attention to the dejected look of each patient with bowlegs, of his series, before the operation, and the self confident poise of each cured case.

It is the consensus of opinion of all psychologists that the mind does not originate any new ideas without first having perceptive inflows through the channels of the senses. It can assimilate, correlate and associate, and the greater the number of inflows and the more variegated the experience, the more numerous the associations of ideas and the greater will be the power of the mind to reflect upon its own background for the purpose of ratiocination.

It is therefore obvious that the more pleasant the experiences and the sensations flowing into the mind through the various senses, the more pleasant will be the makeup of that mentality and the healthier will be the ideas flowing from such mind. Conversely, the disturbance of the proper physicomental equilibrium must have a telling effect upon both, the body as well as the mind. It is also self evident that the earlier in life that disturbance takes place, the more perceptible will be the discord, due to the smaller number of set associations in the mind, as well as the plasticity of the mind to incorporate all kinds of associations with facility.

In earlier childhood the difference between the masculine and feminine type manifests itself in the love for different games. The girl loves her domestic plays, her dolls, her make believe school, and a number of other such tame games. The boy, on the other hand, will choose more hazardous games looking for an outlet of greater energy, more courage and more combativeness. The plays most dear to the hearts of all boys are running, jumping, climbing, skating, wrestling, flying kites, building bonfires, etc.

According to the Groos theory of play the plays of animals and children are instincts which have arisen through the action of natural selection because of their usefulness as a practice and preparation for life's later serious duties. Spencer identified it with the display of excess energy generated in the youthful organism. Other consider play as identified with the spontaneous expressions of the unspoiled and inexperienced mind. Whatever view is taken of the origin of play, its significance as a means of introducing the child into very vital forms of social contact is quite beyond question.

Utilizing that knowledge the intelligent orthopedist can bring about improvements in certain defective organs without the patient's direct knowledge of the need of his cooperation. I have obtained remarkable results in cases of children suffering from mild conditions of infantile paralysis by ordering games according to the age and sex of the child.

Recalling further that tuberculosis of joints is recognized as a disease of the first decade of life, because the majority of cases make their appearance at that period of life, the importance of determining the mode of treatment, with a slight differentiation in order to allow for the different temperaments of the two sexes and their different tendencies, becomes clear.

It is in the determination of the mode of treatment and the mode of procedure in these young children that the wisdom, the training and the psychological insight of the intelligent orthopedic surgeon will show itself. As Judson (3) so beautifully puts it:

"The orthopedic surgeon may be the depository of exceptional knowledge, but his work includes not many opportunities to obtain brilliant results or to achieve operative success, which is so greatly and so justly admired in the public mind. He throws a deformed foot into a new attitude in which increasing activity and growth promote and insure symmetry. He gives to a tuberculous joint a new environment favorable to natural repair and recovery with an unexpected restoration of locomotor ability. He provides a reinforcement for a paralyzed limb which meets the immediate necessity of the case, and secures future activity and comfort. A studious application of the methods of precision on which he relies cultivates his aptitude for mechanics and fosters his respect for whatever is physically demonstrable. If he adds to natural ingenuity an inherited or acquired preference for slow and sure, rather than rapid and indeterminate methods, he is in a position to witness and reverently to assist constantly recurring natural miracles in repair and recovery, not forgetting the friendship of his patients, their bashfulness, ready confidence, irrepressible cheerfulness, and graceful acceptance of what is, alas, inevitable. The combination in their young lives of childish and heroic qualities suggests a fantasy in which birds and wild flowers act a tragedy, and improve the precepts of stoic philosophy."

One period of life, however, deserving the most serious attention from an orthopedic as well as a psychological point of view is the period of adolescence. Many of the cripples which have begun their treatment when young will have to continue to be under supervision during the adolescent period and many diseases will be discovered at that period. The statistics taken from the Ruptured and Crippled Hospital quoted by Whitman show that out of 1259 cases of spinal tuberculosis eighteen and three tenths per cent. or 234 were diagnosed from six to ten years of age, and seven and two tenths per cent. or eighty-nine cases the disease started between eleven and twenty years of age.

In hip disease Whitman again finds that out of one thousand tabulated cases 108 began between the age of ten and sixteen years. As those cases usually take years of treatment, the disease, even in those begun much younger, will probably still be active when they reach the adolescent stage.

In curvatures of the spine Lovett, when speaking of the age, quotes Eulenberg that over fifty per cent. of all cases coming under the latter's treatment were between seven and ten years old. Muller finds the greatest number of cases of curvatures in the fourteenth year. This is another disease which take years of treatment and many of them with indifferent results.

Sex is another important consideration, when speaking of deformities in the adolescent period, for this period is one which differentiates the sexes from one another, physically as well as mentally, and must therefore be considered from that viewpoint. Sex, says Whitman, when speaking of tuberculosis of the spine, exercises comparatively little influence on the liability to the disease of this region. Of 3797 cases collected by Mohr, Gibney, Taylor and Bradford and Lovett quoted by Hoffa, 2045 were in males and 1752 were in females. While in tuberculosis of the hip out of 1000 cases collected fifty-three and three tenths per cent. were in males and forty-four and seven tenths per cent. females.

In scoliosis, Lovett remarks that "Records of the relative frequency of scoliosis in adolescents and children made in orthopedic institutions, where patients apply for treatment, show a very much larger percentage of scoliosis among girls than in boys."

It is of this period of life that G. Stanley Hall speaks as "The phenomenon of adolescence is to be understood only as it is conceived as the entrance of the individual into the larger life of the race, so that the psyche reverberates with old phyletic memories lying deep within the nerve plexuses and ganglia of the subconscious, far below the level of consciousness; feels the impulse of irresistible forces which urge the boy or girl to express in their own person the myriad activities which have characterized the stirps in the long æons of its development; and is flushed with that mighty creative energy which has forced the living organism to ever higher forms of existence, and now impels the adolescent to be and do all things in his own person."

Dr. Blanchard (4) after a thorough discussion of the development of the evolutionary theory and the psychology of the unconscious concludes thus, "It becomes evident that Jung might well have carried his philosophy a step farther, and designate woman as the Freudian type or feeling type and man as the Adlerian type or the power type. He might also have said that the supreme struggle between these two principles of human conduct takes place at adolescence, which cannot be adequately explained upon any other basis. The struggle is more profound in the girl than in the boy, because she must learn to achieve complete subordination of the egocentric tendencies which have been the sole guide of her conduct up to this time. The boy, on the other hand, after a brief period in which his emotional life is flushed with this new impulse to serve his fellows, returns to a great extent to his old condition of egoism and self-aggrandisement. It is the intensity of this struggle and the enormous difficulty of entirely achieving her goal, which has stamped woman with a greater taint of neuroticism than man." It is therefore selfevident that any physical deformity or defect which will still further increase the difficulty for woman to attain the full development of her ultimate nature will certainly increase the neuroticism, unless the problem is met early by making an extreme effort to cover the defect from the gaze of the people, and at the same time try to convince the growing patient that with her complete and painstaking cooperation improvement of her condition is assured. If, however, the orthopedic surgeon knows that cure is beyond the ken of his knowledge and ability he must meet the problem by obtaining the cooperation of a social worker whose business should be to help the patient gain in broadness of scope, and visualize to her the importance of expressing her tender impulses in service of mankind; instead of in her own restricted family circle."

In the boy, on the other hand, whose root of unconscious cerebration is, according to Dr. Blanchard, the Adlerian type or *Wille Zur Macht,* the libido or racial instinct is quite overshadowed by the egoistic impulses which had their primordial source in the instinct of selfpreservation, and are manifested in man through an inordinate craving for power.

"The physiological basis which determines the strength of this desire in the individual is defective organic structure, which retards processes of adaptation and creates a feeling of inferiority and inability to meet the struggle for existence, for which the sufferer tries to compensate by increasing the quality of his higher psychic processes. In its extreme form this produces the intellectual genius, who thus receives his impetus from his physical weakness, but it also produces the neurotic, who takes refuge from the hardships which are too stern for his impaired organism in a world of fantasy, or uses his weakness to obtain control over his associates, who dare not refuse his most outrageous requests lest they upset his nervous mechanism."

During adolescence, when the mental adjustment and the psychic differences of the sexes assert themselves, the fear of the woman to suffer the penalty of a continuous and everlasting independence as a result of deformity is uppermost in the mind of the parents, and in the subconsciousness of the patient.

To the boy, on the other hand, the most important consideration is the need of the proper physical condition which will make him the breadwinner of the family in the future, and therefore in need of being made independent so as to be in a position to meet the struggle for existence, and his mind must be relieved on that score.

The differences mentioned above in the temperaments of the two sexes, the libido in the girl and the *Ichtrieb* in the boy, in the adolescent period, is well seen in the patients suffering from various deformities. The girl of sixteen years will suffer intense agonies from painful feet rather than put on a shoe that looks somewhat clumsy. The young man, on the other hand, will not be concerned about the shape of the shoe, as long as it will give him relief, so that he can go about his way undisturbed by the pains. Bow legs and knock knees, in my experience, make young men who suffer from them very sensitive, and will go to extremes in order to have the deformity corrected. Recently a young man came to my office, having had bow legs since childhood, telling me that unless I would undertake to cure his deformity he did not care to live. He told me that the reason for his mental anguish was the fact that he felt inferior to others with whom he associated.

The young feminine group do not seem to mind a little deformity like a bow leg or a knock knee, because their dresses cover the defect. Curvature of the spine being visible and interfering with their figure and attractive shape, the girls will hurry to the physician to seek relief soon after the discovery of the condition is made.

The boys, on the other hand, come for treatment when the curvatures are very marked.

Lovett, in speaking of scoliosis, bears out my statement when he remarks that the difference between the sexes is less where large numbers of school children are investigated, such figures showing in general a slightly higher percentage in girls than in boys. To explain the different findings between institutional investigation and school examination, he remarks: "We must either assume that boys outgrow their scoliosis, or that they do not come to the institutions for treatment until the curves become severe, or until complications arise; while in girls the effect of scoliosis upon the figure are perceptible, much earlier, and treatment is sought to remedy curves which in boys would pass unnoticed by parents." The girls are usually cranky, irritable, and as they grow older they become depressed. In some suicidal tendencies may develop. They are willing to give away everything they possess to anyone who will promise them a cure, and are therefore easy prey for all professional charlatans, as well as subjects for all kinds of experimentation. These patients, if they cannot be cured entirely, will be satisfied if we succeed in concealing the deformity.

To put the matter in concrete form it is necessary for the orthopedic surgeon to view his patients suffering from deformities from the psychological viewpoint, as well as from the point of view of physiology and mechanics, and acquaint himself with the subconscious motives activating those sufferers to seek relief, for only in that way can he deal with his patient thoroughly, scientifically, and successfully.

The effect of early and proper orthopedic treatment upon the entire poesy and life of a Byron and a Pope is hard to conjecture, but one thing we are certain, i. e., that we could have saved both of them much mental anguish had we succeeded in restoring their physicomental equilibrium when they were as yet in their plastic and mouldable ages, and this, after all, is one of the chief aims of our specialty.

In dealing with adults it is worth while to remember the difference of the various traits in the sexes, and utilize that knowledge when occasion demands it. Thus according to Thorndike:

	Woman	*Man*
Emotion	50	30
Temperance	50	30
Impulsiveness	50	34
Religiousness	50	36
Patience	50	38
Vanity	50	40
Shyness	50	42
Temper	50	56
Selfconsciousness	50	57
Humor	50	61
Independence	50	70

I cannot let this opportunity go by without speaking of a subject near and dear to my heart, namely:

FRACTURES OF THE EXTREMITIES.

According to the recent literature one may be led to believe that every one sustaining a fracture ought to be placed in a hospital suspended upon a Balkan frame with weights and pulleys, and that only in that way can we ever hope to treat the patient scientifically and correctly. The experience gained on the battle fields will thus not have been in vain.

Those of us who have had the fortune or misfortune to take active part in this warfare over the seas, who have thus had the opportunity to observe many of the wounded soldiers who were treated by that method, know that the wounded soldier, who on account of trench life became a mental and physical wreck, cannot serve as a criterion for the proper treatment of a well fed, mentally balanced, easy going civilian. The former need mental as well as physical rest, while the latter needs alignment of the fragments, thus permitting the patient to continue his mental activities.

In this connection permit me to quote my own writings with reference to that matter.

"Inanimate objects have certain inflexible physical laws by which they are governed, and the application of these laws is all that is necessary to get the same results. In dealings with human beings, however, we must take into account the human and psychic element, and every individual is a law unto himself in that respect. Whenever a man has sustained an injury which will necessarily confine him to his home for a longer or shorter time, the following facts must be faced, 1, He is deprived of his normal mode of living, 2, His suffering will impress itself upon his mind, and after the actual pains have ceased there will linger the impression of those pains in the subconsciousness which will tend to perpetuate the helplessness of the patient. It is therefore self evident that the sooner the patient is restored to his normal environment the less chance there is for him to become obsessed with his helpless feeling."

Acting upon this theory I am always concerned about the patient's return to his normal occupation at the earliest possible moment. For example, a patient having sustained a Pott's fracture is given an anesthetic and the fracture is properly reduced, immobilized by plaster of Paris boot, and then an x ray is taken. If the alignment is good, the patient, if he is a professional man or a business man or an office man, is permitted to return to his occupation after a week, walking with the aid of crutches, and a shoe raised on three inches of cork sole on the normal foot, so as to keep off any jarring on the injured limb. An automobile pressed into service will be able to take him to and fro. The effect of such treatment upon the patient's mentality is remarkable.

On the other hand, the same fracture sustained by a weak overworked and exhausted housewife should be treated like the one in the soldier injured upon the battle field. She should be removed from her home to a hospital, for she is in need of mental as well as physical rest, both of which she cannot obtain at home surrounded by her old associations. If nothing else can keep her in the hospital, a Balkan frame is certainly impressive enough and should be resorted to.

Simplicity is the tendency of the modern age, and medicine and surgery has no right to lag behind.

143 West Eighty-sixth Street.

The Mobile V Colon, Its Causes, Effects and Correction*

By ELIZA M. MOSHER, M. D.,
Brooklyn, N. Y.

A careful search of the literature concerning colonic conditions fails to throw light upon the cause of the acute angle quite frequently acquired by a perfectly mobile transverse colon in some part of its course between the hepatic and splenic flexure.

It has been my habit during a number of years to include in my examination of patients not only the condition of the musculature of the abdominal wall with reference to its supporting power, but the position and degree of distention of the various segments of the alimentary canal as far as can be ascertained by auscultatory percussion and auscultation. This was done to discover as far as possible: 1. Congenital or acquired abnormalities, if present. 2. To note the relation of the different parts of the canal to certain fixed landmarks, i. e., the ensiform cartilage, bisiliac line, and pubic symphysis. 3. To note the degree of distention present, its location and apparent permanency, or otherwise.

By this examination, as by the x ray, many deviations from the normal have been observed. Among these is found a somewhat common, sharp bend downward and upward again in the transverse colon (without fixation). This bend, which is the subject of this paper, because of its resemblance to the letter V, has been aptly termed the V colon. The location, depth and acuteness of the angle formed vary in different cases; in extreme cases its apex approaches the pubis. More often, however, its lowest point is found three or four inches below the bisiliac line. I have found this sharp downward bend in children, but more often in adults of both sexes.

The etiology of this peculiar bend in the colon was an unsolved problem to me, as it evidently has been to others, until one day an abdomen was examined in which a marked separation of the recti muscles was observed behind and below the umbilicus (in this particular patient located an inch or more above the bisiliac line). By this separation of the supporting muscle bands a deep sulcus was

---

* Read before the Medical Society of the County of Kings, Brooklyn, December 21, 1920.

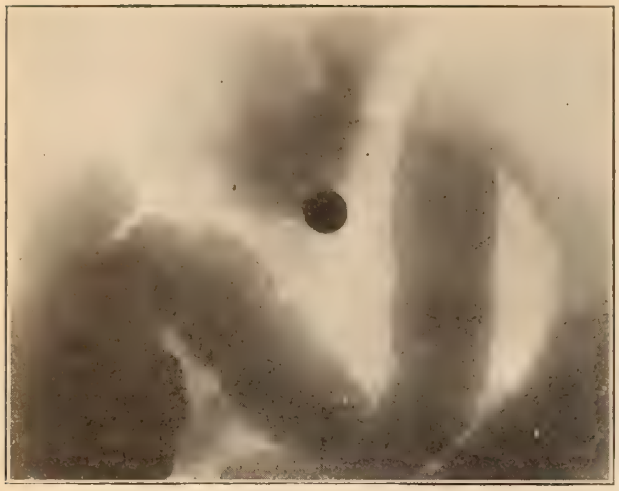


Fig. 1.—Mobile V Colon.

formed in which lay the sharply bent colon. The lack of wall support thus produced evidently permitted the colon to drop, forming the angle described.

Shortly after this observation was made, a patient presented herself in whom a high abdominal section at some previous time had been made. There was a firm union below, but in the upper abdomen the recti muscles were widely separated. Here again the transverse colon had dropped, forming an acute angle.

Later a patient was examined in whom a sharp bend in the colon was found well to the right side of the navel instead of directly below it. A careful study of this case showed an elongated weak rectus muscle on the right side, while its fellow was firm and in normal position. The patient was a sculptor. She had worked almost constantly standing on a scaffold, holding in her left hand the mortar which she applied with the right. In doing this she was obliged to raise the right arm to shoulder level or above, at the same time dropping head and shoulders to the left. This posture placed the right rectus muscle more or less continuously on the stretch, thus causing its fibres to lose their tonicity, weakening the abdominal wall in that region and permitting the unsupported colon to drop downward into the space formed.

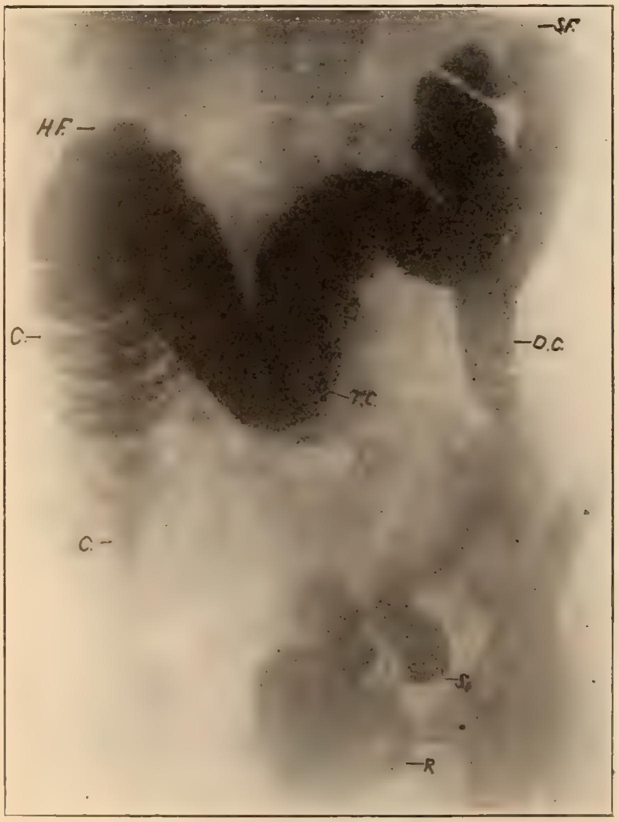


Fig. 2.—Mobile V Colon.

In a long series of cases a localized weakness of the abdominal wall has been found *pari passu* with the V colon, indicating that to this condition it owes its origin in many cases. In passing it must be noted that the socalled festoon, with which we have long been familiar, is not synonymous with the V colon. Laxness of the abdominal wall in its entirety permits partial or complete visceroptosis, in which condition the angulation of the colon is located in the hepatic and splenic regions. Because of its firm attachment to the side wall of the body, the angle thus formed is not usually as acute as that in the region of the navel, and its results, while always harmful in the way of damming back the contents of the canal, are less so than those due to the V colon.

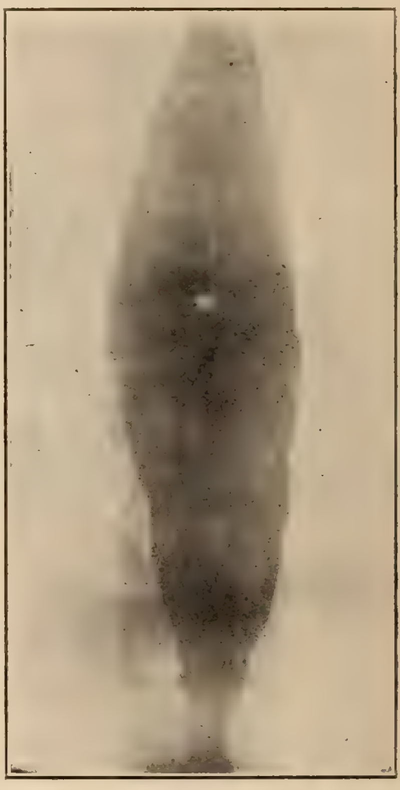


Fig. 3.—Lead plate in sulcus between separated recto muscles.

REMOTE CAUSES.

These seem to be numerous—a history of umbilical hernia in infancy has been elicited in a few cases, which may have left a weak place in the abdominal wall in that region.

Prolonged sitting on the floor or jolting in a baby carriage causes strong intraabdominal pressure upon the muscle wall. If at the same time the legs are everted, as they commonly are in this posture, a separation of the recti muscles is inevitable, thus weakening the abdominal wall. The stoop position in play, if long continued, may cause a temporary angulation of the colon. One such case has been seen by me.

A slender, long bodied boy of six was given an attractive toy van. He played with it almost constantly, bending to load and unload it and to push it before him. After two or three weeks of such play he was seized with violent pains across the abdomen, which centred in the region of the navel. A few days in bed under medical care resulted in recovery, and he resumed his play with the van. In a short time he had a similar attack and recovered as before. When a third threatened, his mother brought him to me. By auscultatory percussion I outlined an acute angle in the colon below the umbilicus. This was corrected on the operating table by exercises to be described later. The muscles of the abdominal wall were strengthened and developed by proper exercises, with the result that there has been no angulation of the colon since, and no repetition of the attacks of pain.

Child bearing has long been a recognized cause of enteroptosis; it must also be included among the causes of production of the V colon. The strain which a gravid uterus exerts upon the abdominal wall, the muscles of which are often but poorly developed, is quite sufficient to overstretch and rupture its fibres. In the same way a separation of the recti muscles may be produced, followed by a V colon.

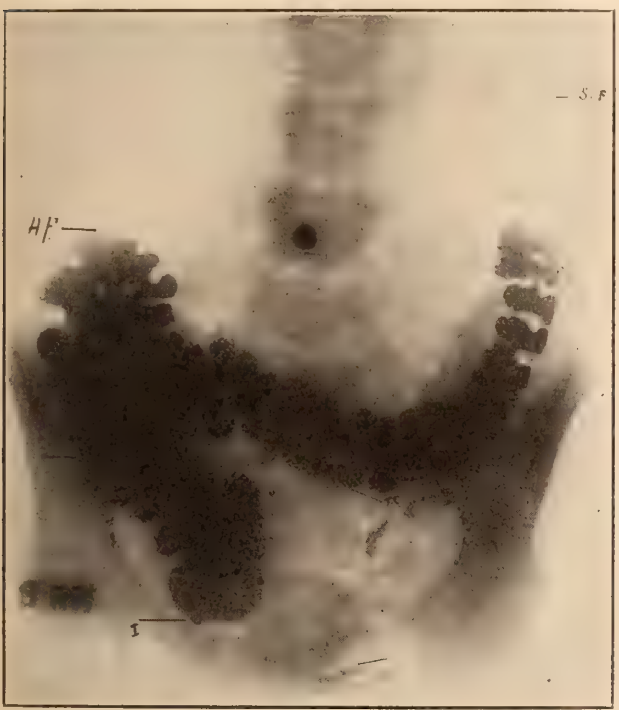


Fig. 4.—Mobile festoon colon.

In a woman with narrow hips, as also in the one with marked anterior obliquity of the pelvis, the pregnant uterus is always carried high and projected strongly forward. A woman thus built came under the care of the writer a month or so after the delivery of a rather large child. Her recti muscles were so widely separated in the upper quadrant of the abdomen that a portion of the transverse colon and loops of the small intestine could be felt in the sulcus thus formed. Although this was an extreme case, it demonstrates the tendency to such overstretching of the abdominal wall in pregnancy as to leave it a weakened structure with a strong probability that sooner or later general visceroptosis or a V colon will result.

Bad postural habits during school life and later produce localized weakness of the abdominal musculature. The slouch standing posture permits laxness of the external and internal oblique and transversalis muscles on the side of the resting leg. In time the wall on that side becomes thin and loses some of its supporting power, while the same muscles on the opposite side by use become firm and strong.

Occupational postures must be included among the causes of the V colon as well as of the more common festoon colon. As men are not exempt from visceroptosis, so also they do not escape the V colon. In fact, it was in a male patient that the writer's attention was first called to separation of the recti muscles as a cause of the formation of a V colon. In this case the muscles of the abdominal wall were fairly well developed, including the recti muscles themselves; because of this the sulcus, formed by their separation, was more evident than is usual in women patients. This man gave a history of having done years of laboratory work over microscope and test tube in a position which crowded the abdominal viscera strongly forward at the waist line.

EFFECTS.

Because of the acute angle formed, the power of the V colon to obstruct the onward flow of the contents of the canal is greater than that of the festoon colon. Its comparatively close attachment to the stomach frequently causes it to drag down that viscus with it, thus lessening the power to empty its contents promptly.

Acute pain results only when the amount of material dammed back into the hepatic colon becomes sufficiently great to cause colic, as it did in the case of the little boy to whom reference has been made. A sense of fullness, discomfort, a dull ache in the hepatic and epigastric regions is often complained of, accompanied by loss of appetite and sometimes nausea. Fatigue out of proportion to effort expended becomes more and more marked as the hepatic and ascending colons undergo greater and greater distention, and probably agglutination of these occurs in some extreme cases. In a word, the entire evil brood generated by intestinal toxemia may be traced in extreme cases to the obstruction of a mobile V colon.

A V colon is not difficult of diagnosis, especially when due to separation of the recti muscles. Inspection in a strong light shows the sulcus between muscles and the fingers of one hand drop into it with slight pressure. In addition to this the evident ballooning of the hepatic colon can be both seen and felt. By auscultatory percussion one easily follows the upper and lower border of the colon as it bends down and up again. The size of the canal is usually lessened in the bent portion, while in the hepatic section by continued distention it becomes doubled or trebled.

CORRECTION.

Fortunately, it is not difficult to replace temporarily either an acutely bent or a festooned colon, when not fastened down by bands or adhesions.

Four or five long, sighing expirations to empty the lungs (body recumbent) permit the diaphragm to rise to its highest level, carrying with it the abdominal contents. If now a properly designed supporting belt be applied and continuously worn with, if need be, a soft pad placed beneath or against any localized weak portion of the wall, there should be no repetition of the displacement of the colon.

The overstretched and ballooned section behind the dropped segment in time usually regains its tonicity, and the stasis that caused intestinal toxemia disappears.

Exercises for bringing together the separated recti muscles and for developing other muscles too weak to hold the contents of the abdomen in place should be promptly inaugurated and faithfully continued. The following are effective and many others can be added:

1. Replacement of viscera by long sighing expirations following moderate inspirations.
2. Frequent and forceful voluntary contraction of the abdominal muscles without the aid of respiration.
3. Slow elevation of the closely approximated legs to a right angle with the trunk (body recumbent).
4. Slowly repeated sidewise see-saw movements of the head and shoulders (body recumbent. The latter movements may also be taken sitting or standing.)

The first of these exercises elevates the abdominal viscera and straightens the bent colon; the second strengthens the entire musculature of the abdominal wall. The third does the same, and draws firmly together the recti muscles. The fourth exercises the lateral muscles of the abdominal wall.

RÉSUMÉ.

A more or less acute angle is liable to form in any part of the transverse colon where there is localized weakness of the abdominal wall. Because this bend resembles the letter V it has been termed the V colon.

In moderate degree this bend is of common occurrence—in extreme degree, occasional.

Its consequences are far reaching. It slowly undermines the health by causing stasis in the bend and in the section of colon behind it.

Recognition of the V colon is easy by auscultatory percussion, but more difficult with bismuth enema, because of the tendency of the latter to mechanically straighten the bend as it fills the transverse colon.

Temporary correction by slow, sighing expirations, elevation of legs, and other measures can be quickly accomplished.

Permanent correction can be made by applying a simple supporting belt, and by the faithful and persistent use of exercises calculated to draw the recti muscles together and to strengthen the entire musculature of the abdominal wall.

Dr. Mosher is indebted to Dr. Frederick Shoop, of Brooklyn, for Plates I, II and III; to Dr. A. J. Quinby, of New York, for Plate IV.

184 Joralemon Street.

Points of Prognostic Importance in Pneumonia

The Report of a Case, with Unusually High Temperature and Recovery

By H. APFEL, M. D.,
Brooklyn.
Instructor Diseases of Children, New York Post-Graduate Medical School and Hospital.

My reasons for reporting so commonplace a disease as pneumonia are: a, its protracted course, three weeks' duration, during which time there were always unmistakable signs of the disease in question; b, the unusually high temperature, at one time the thermometer registering 108° F. by rectum, the pulse was unobtainable and the respiration was of the Cheyne-Stokes type and the patient finally recovered.

It is my belief that we can gain most from reviewing our experiences from our bedside notes, after the case comes to a termination. It is only in that way that we can learn to more intelligently decipher the true meaning of signs and symptoms. It is only in this way that we may learn to be able to give a more or less correct prognosis for which the pediatrist is frequently consulted.

One frequently hears the remark: "This patient's condition is very grave; his temperature is 105° or 106° F." All things considered, that is usually not a dangerous sign, except where the temperature may continue persistently high, for a long time. The more one sees of pneumonia the more one disregards temperature and pays more attention to the general condition of the patient as expressed by pulse, respiration, cardiac tone, and, above all, the state of the alimentary tract. Marked and persistent distention of the abdomen should be watched with extreme vigilance. An abdomen that tends to blow up soon after its distention may have been reduced therapeutically should be regarded as a danger signal.

Whether the chest should be examined at each visit or not is a debatable question—it is perhaps wiser not to, but one must never fail to uncover and palpate the abdomen. It is only in this way that one can keep constant watch on the most dangerous complication in pneumonia—intestinal distention. A long and protracted illness of the gastrointestinal tract, antedating the onset of acute pneumonia, predisposes the patient to this complication, and should always be regarded in the prognosis. An accurate prognosis cannot be given by judging the number of centimetres of lung tissue involved. For we have all seen cases with apparently only a limited area of lung involvement and the patient showing signs of severe toxicity. On the other hand, we may encounter a case where a goodly part of one lung may be affected, and the patient may be found sitting up in bed. All this goes to show that it is not merely mechanical embarrassment, but rather the grade of toxemia or the type of organism with which we are dealing that concerns us mostly. The latter statement can be proved when we think of the many cases of pleurisy with effusion we see, the kind that may temporarily incapacitate half of the chest, and still these patients do not seem to suffer any undue dyspnea, if any. Pneumonia following in the wake of an attack of influenza is always more or less grave.

In taking an inventory of our symptoms to make up the prognosis, we need not be alarmed by a rapid pulse rate but rather by its quality. A pulse that is soft and compressible and is not sustained very long after the usual stimulation is administered, denotes a poor myocardium as well as poor vasomotor tone. The question of age in a given case is a small factor in prognosis. A conscientious nurse, not alone a graduate nurse, goes a long way toward your asset for a good prognosis, and no emphasis would be too strong on this point. We regret, however, that this is mostly a matter of luck rather than of choice. A right heart enlargement is a grave sign. An affection of the kidneys, especially pyelitis, during the course of a pneumonia, is a most dangerous sign. Pyelitis at the very start of the pneumonia usually spells death. Griffith (1), in his book, cites a case of bronchopneumonia with a temperature of 108° F. and recovery. Reily (2) reports cases of recent epidemic that ran a course of from two to three weeks, giving as many as five relapses in a single case. Smith (3), in his review of 3,965 cases of pneumonia from a base hospital in Tuel, France, says the temperature furnished no prognostic indication.

CASE.—A girl, thirteen months old, bottle fed since birth, fairly well nourished. The past history: Had been suffering from ileocolitis for past four months, during which time she lost some weight. The present trouble commenced on September 10th with a high temperature, and the patient was quite ill.

The physical examination showed a poorly nourished child, about a year old, of clear mentality. The chest and abdomen as well as the throat were found to be negative, as were the ears and pupils. McEwen's sign, opisthotonos, Kernig and Babinski, all were found to be negative. The rectal temperature was 105° F., pulse 175, respiration 32. The skin was free from any rash. The following day the temperature came down to 102° F., the child being quite playful. On the third day of the illness the temperature went up to 105.5° F., respiration 60, pulse 180 and of good quality. The chest findings were negative, urine negative, and bowels regular. Two days later, physical examination showed some dullness in right upper chest posteriorly and rough breathing over the same area. Six days after the onset of present illness the temperature was 106.5° F., and over night it dropped to 99° F., the child playful and smiling; the lung showed signs of resolution. The following night (twenty-four hours later), the temperature returned to 106° F., respiration 70, pulse 180. The patient was drowsy and coughing slightly. Examination of the chest at this time disclosed some roughness over the old area posteriorly as well as marked bronchial breathing over right side anteriorly above the clavicle and for two centimetres below it, with marked dullness. These signs continued for seven days without any noticeable change. Throughout this relapse the temperature ranged between 102°-106.8° F. The highest respiration record during this illness was 100, and pulse 180. This picture changed at the end of seven days, with profuse diaphoresis, the temperature 99° F., pulse 108, and respiration 56. This abatement of symptoms only lasted for a few hours, when the patient had a relapse, temperature 104°, pulse 144, and respiration 66. The following morning examination of the left chest posteriorly showed bronchovesicular breathing and some dullness. The abdomen became enormously distended. This distention persisted throughout the remaining days of the child's illness, in spite of every effort to relieve it. The liver could be palpated, its lower border reaching four fingers' breadth below the free border of the ribs on the right side. The color of the lips was somewhat cyanotic. The patient was in almost constant stupor. Patient would take its food, but could not hold it down very long. On examination of the ears at this time, the left ear drum was found to be markedly inflamed, but not bulging. The temperature remained at this stage for four more days, when, toward two p. m., it gradually climbed to 108° F., respiration very irregular, of the Cheyne-Stokes type, the pulse imperceptible. After stimulation with adrenalin, camphor, and other drugs, the temperature came down to 106° F., and the patient rallied somewhat. Five days after the last drop in temperature the chart again showed a temperature of 99° F., with a corresponding drop in pulse and respiration, 120 and 46, respectively. After another relapse of two days' duration, the temperature dropped to 98.6° F. and the picture changed for the better.

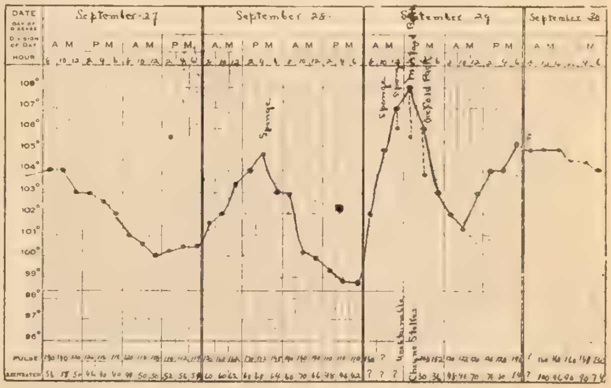


FIG. 1.—Pneumonia chart.

The heart remained in good condition throughout the entire course of the illness, in spite of the extreme distention of the abdominal viscera. The child from then on made an uneventful recovery.

REFERENCES.

1. GRIFFITH: *Pediatrics*, vol. i, Saunders.
2. REILY: *Medical Record*, 1919, vol. 95, p. 229.
3. SMITH: *American Journal of the Medical Sciences*, 1920, vol. clix, 561.

The Nonsurgical Methods of Treating Cancer*

By HENRY K. PANCOAST, M. D.,
Philadelphia,
Professor of Röntgenology, University of Pennsylvania.

In the treatment of malignancy the object to be attained is the eradication of all tumor cells, either by extirpation or by some destructive process. The favorite procedures of the present day are surgery, exposure to röntgen rays, the use of radium, and the application of heat. Less important methods, such as the use of caustics and carbon dioxide snow, may be practically eliminated from discussion. Injections of Coley's fluid in sarcoma is well worth consideration. In the endeavor to obtain the best result one should never be so biased in opinion as to follow solely that procedure in which one is best trained and equipped, with disregard for all others, but should select the method or combination of methods most likely to accomplish the result with greatest certainty, in the least time, with the minimum danger to the patient's life and important structures, and in some parts of the body, as the face, with due regard to unnecessary sacrifice of normal tissue.

In the treatment of cancer in some regions of the body, as the stomach and bowel, surgery is the only procedure offering practically any chance of success, but to be effectual it must remove every cancer cell, for the supplemental use of röntgen rays or radium offers little hope when surgical removal fails. In other regions, as the uterine cervix, breast and lower lip, the question of unusually rapid metastasis is of paramount importance, and surgery is the quickest method of extirpation. Here again, however, it must eradicate every cell, and failure to do so not only leaves a focus for recurrence and subsequent metastasis, but the act of cutting through cancerous areas may, in some instances at least, actually sow the seeds of metastasis. In these localities the other methods may be employed more or less successfully to supplement excision in an attempt to destroy the remaining cancer cells. Radiation and heat, usually in the form of electrothermic coagulation, are employed routinely in these regions in the socalled palliative treatment in inoperable cases, and the more successful they prove to be the more they encroach upon surgery in the border line operable case. Only in the case of the lower lip has anyone hazarded the attempt to place them on an equal footing with surgery, but even in this instance very important reservations must be made in respect to technic before they should be in any way considered in this respect. These remarks are not intended in any way to decry the efficacy of surgery or to herald an unwarranted encroachment upon the surgical field.

In other localities where early metastasis does not have to be so carefully considered, as other portions of the face and especially the eyelids, radiation and electrothermic methods usually offer better cosmetic results and are rather uniformly successful. In the mouth, surgery is difficult as a rule, possibly excluding the tongue, and growths are so frequently found at an inoperable stage. Fortunately, radiation and electrothermic methods offer considerable hope of success, if the growth is not too extensive.

Probably no branch of medicine offers a greater field for haphazard work than does that which embraces the use of the destructive agents in cancer. They came into extensive use before the profession at large could be educated in their proper application and principles. That they are extensively employed in an improper manner and without adequate training should be generally recognized, and it is hoped that a program of education on the part of the medical profession will bring about a recognition of the proper requirements to be met by those who employ these agents.

Excitation of the x ray tube produces a form of energy known as the x rays, which in medical literature in this country are given the name röntgen rays. They constitute a form of ether vibration similar to light, but much more rapid and with a much shorter wave length, and with a greater power of penetration, which bears a fairly definite but not constant relation to the atomic weight of the substance traversed. In other words, the absorption of x rays varies somewhat according to atomic weight, but the relation is not constant. Exposure of body tissue to x rays brings about definite and well recognized effects. Both the volume and penetration of the rays can be measured and controlled. The output of an x ray tube is a bundle of waves varying somewhat in their powers of penetration, just as do the various components of the light spectrum. For the effect on different depths of tissue definite degrees of penetration are desired, and they are obtained by controlling penetration of the output and by filtering out waves of feeble and undesirable degrees of penetration. The exact effect upon cells is not known, but it is probable that the production of secondary radiation within the tissues plays a part.

Radium is one of the elements of high atomic weight that has an unstable atom and is undergoing at a constant rate a process of decay and giving rise to phenomena of radioactivity. The radium atom throws off a part of itself called an alpha particle, which is in reality an atom of helium, with an atomic weight of four. It therefore loses four in atomic weight and becomes a new substance called radium emanation, a heavy gas. The alpha particle is thrown off with explosive violence, but because of its mass it does not travel far and is readily stopped by the thin glass of the radium tube. It is not, therefore, of any value in treatment, but is an active agent in rendering luminous such substances as zinc sulphide in the radiolite watch. The radium emanation is short lived, lasting but a few days, and each atom gives off an alpha particle or helium atom and becomes radium A, a solid. From the condition of a gas, the atom passes through the successive stages or elemental forms of matter of radium A, radium B, and radium C, in considerably less than an hour. When the atom of radium C disrupts, it gives off an alpha particle, and one or more smaller or lighter particles known as beta particles which are the same as the negative electron of the atom and the same little body which makes up the cathode stream producing the x rays in the x ray tube. The beta particle is thrown off with a velocity approaching that of light, and for this reason, and also because of its small mass, it is highly penetrating, approximately a millimetre of lead or silver, half a millimetre of platinum, or three millimetres of aluminum being necessary to stop it. This is the active therapeutic agent in the superficial use of radium, and it may also be in the deep applications.

---

*Read before the Philadelphia County Medical Society, November 24, 1920.

At the time of the disruption of the atom of radium C there is produced an ether disturbance known as the gamma ray, which is a form of ether vibration similar to the x ray, but even more penetrating. This is the form in which energy from radium is carried into the deeper tissues, but it may act upon them indirectly through the production of secondary beta rays or particles.

It will be seen that the active stage of radioactivity, radium C disintegration, occurs within an hour after the decay of the emanation or gas stage, and that the life of the emanation is a matter of days. It is possible to collect the emanation and store it in fine capillary glass tubes which then contain all the useful potential energy of radium. Radium can be used, therefore, in two ways: either as the salt of radium or in the form of the emanation.

If one wishes to treat a very superficial lesion, and the beta particles are the active agents, little filtration is used, so that most of the effect may be superficial. The relative amount of gamma rays passing through the superficial tissues is negligible. If, however, the deep structures are to be treated, where the beta particles would not reach, it is desirable to filter them out and avoid an unnecessary superficial reaction. By so doing, the gamma rays alone can be employed to carry energy into the deep tissues with a minimum amount of skin reaction.

So far as has been determined at the present time the effects of radium and of x rays upon the tissues are the same. When speaking of the use of both agents in a general way the term radiation is usually employed. There are certain general principles to be observed in the administration of radiation, which may be formulated as follows:

1. The general effect upon tissues following the prolonged application of radiation is, first, stimulation, longer exposure induces an inflammatory reaction, and still longer, cell destruction.

2. Therapeutic action depends upon the production of one of these reactions in the tissues. There are conditions in which one of these reactions is necessary to bring about a cure.

3. The effect upon healthy or apparently healthy cells is largely in the order of their specialization. The ovary and testicle are extremely susceptible. Glandular secreting cells are far more susceptible than other cells of the same structure, hence the success in treating acne vulgaris and hyperthyroidism. Nerve tissue cells are a notable exception, being unusually resistant to destructive doses, hence the great pain in röntgen ulcers. Brain tumors may be treated by adequate doses without much risk of damage to the normal brain structure. This susceptibility and resistance on the part of different cells are frequently described from a different viewpoint as the selective action of the rays.

4. In tumors, susceptibility bears a certain relation to the approach of the cells to embryonal types. The cells of the keloid and hypertrophied scar are more susceptible than normal connective tissue cells. The sarcoma is more easily influenced than the fibroma. Carcinoma cells are more readily affected than normal gland cells. The success in treating a malignant growth depends in a large measure upon the relative susceptibility of the tumor cells and the normal cells. If the former exhibit a resistance equal to or greater than the normal cells, treatment by radiation alone is likely to fail.

5. Diseased cells with lowered vitality, as in the carbuncle, are more readily influenced than healthy cells.

6. Certain lymphoid structures under abnormal conditions exhibit a remarkable susceptibility to radiation. Familiar examples of this are found in the leucemias and the lymphoid structure of the persistent thymus. The amount of radiation required for cellular destruction is less than in any other tissues or conditions. It is probable that the destructive agent is not the radiation, but a substance the production of which is induced by the action of the radiation upon the cells exposed. This rapid disintegration of cells is frequently observed in lymphosarcoma.

7. The effect upon the smaller bloodvessels and lymphatic vessels of prolonged radiation is an obliteration of the lumen through proliferation of the intima. This is a distinct advantage in the lymphatics, as it tends to check metastases.

8. The effect is probably greatest in the tissues in which the radiation is absorbed.

9. Even massive doses of radiation have very little effect upon microorganisms in culture, but there is frequently a decided effect upon those growing in tissues, probably secondarily through tissue reaction.

10. The effect of radiation is to a certain extent cumulative, but one massive dose is more effectual than several smaller ones frequently repeated.

11. With the exception of the lymphoid structures previously mentioned there is a latent period between the exposure and the manifestations of the reaction. This varies from a few days to several weeks.

12. Wherever heat can be advantageously applied by some method, the combination of heat and radiation is more effectual in cell destruction than either agent alone.

13. In the treatment of deep seated malignancy by radiation one must always bear in mind the loss of intensity through absorption by intervening tissues and through dispersion according to the law of inverse squares. In order to deliver a destructive dose to a lesion at a certain depth the number of ports of entry for a therapeutic dose must be based

upon these factors and the area of the growth treated.

14. The factors in the success of treatment are three: First, the observation and application of the above principles involved; secondly, the selection and use of radiation of the proper penetration and the employment of adequate filtration; and thirdly, the administration of a dosage sufficient to induce the reaction required to produce the desired effect.

In order to demonstrate the importance of correct technic, the application of the principles of therapy, and the appropriate combination of the various methods of nonsurgical treatment of cancer we may select as two concrete examples epithelioma of the lower lip and carcinoma of the cervix uteri.

As a primary lesion alone, epithelioma of the lower lip is not to be regarded with any more seriousness than a similar lesion elsewhere on the face. The comparatively early metastasis in the neck, however, renders it a serious and dangerous growth. In dealing with it from any surgical or nonsurgical point of view, one must always bear in mind the primary lesion itself, the avenues through which metastasis is carried and the localities in which metastasis may occur or has occurred. All of these three regions must be carefully considered and treated. Nonsurgical measures have the advantage of taking care of the last two localities adequately whether metastasis has occurred or not.

The technic we have employed is as follows:

A. The primary lesion is thoroughly radiated by radium over the growth and somewhat wide of the visible and palpable evidences, cross firing from the skin and the mucous surfaces, giving sufficient dosage to produce an intense reaction. The area is then removed as soon as possible by electrothermic coagulation, including every visible and palpable manifestation. This is done under local or general anesthesia, or morphine and scopolamine.

B. The lymphatic drainage from the lower lip goes to the submental region and also to the submaxillary group of lymphatic glands on each side, and there is also a communication in the neck from one side to the other. Even though submental or submaxillary enlargements may not be palpable, one cannot be absolutely certain that plugs of cells have not started through the lymph channels. Therefore, radiation should be vigorously applied over the avenues of metastasis, at the same time the primary lesion is treated. The skin is radiated from about the level of the facial artery on one side, across the chin, to the same locality on the other side. Röntgen rays may be employed for this purpose, but we prefer radium, fairly well screened, and in sufficient doses to produce a marked first degree reaction.

C. Whether glandular metastasis has taken place or not, both sides of the neck should also be radiated thoroughly, being sure to include the submental region. Röntgen rays may well be employed for this purpose, but radium may of course answer the purpose. If the former is employed, and any glands are palpable, the particular area or areas where a single gland or glands are felt are given a dose of radium in addition to the röntgen ray dose, and at the same time. This may be taking some chances with the skin, but the slight risk of a small ulceration of the skin is hardly to be considered when the life of the patient is at stake. Cancer is a disease in the treatment of which we cannot afford to be too cautious. A severe reaction is to be expected, but we have never seen it go beyond a second degree stage. This technic applies to cases in which glands are just beginning to be palpable and the earliest evidence is frequently a small nodule the size of a French pea in the submental region. In four weeks, if the reaction has subsided, the radiation of the face and neck is repeated, but a somewhat smaller dose of radium is applied. In another four weeks, another series of applications may be made. Following the third application, if glands are still palpable, a block dissection may be advised, as the glands are no longer being fed and the disease is localized.

Unless epithelioma of the lower lip is treated in this systematic and vigorous manner, or according to a very similar technic, it should by all means remain a surgical condition. Treatment of the primary lesion alone places the radiologist in the category of the quack.

The treatment of carcinoma of the cervix uteri by radiation has become the procedure of choice in all cases that are not definitely in an operable stage, or, on the other hand, have not reached such an advanced stage that the attempt at complete removal of the primary growth would leave the patient in a worse condition than if let alone, because of opening up important structures such as the bladder or rectum or ureters. An operable case must be regarded as one in which the growth is distinctly localized in the cervix, and in its removal the surgeon is absolutely certain of not cutting through carcinoma tissue. In any case of doubt, radiation is the method of choice, for the nearer the case approaches an operable stage, the better are the chances of permanent cure. In the treatment by radium, a part of the dose is applied to the cervical canal and a part outside for the purpose of cross fire. Both the bladder and rectum must be carefully protected by gauze packing to push them as far from the radium as possible. A lead shield may be employed in addition immediately around the radium. If the growth has progressed beyond the cervix, radium needles or emanation tubes should be used in addition.

The exact distance in tissues to which a given dose of radiation will act in destroying cancer cells is more or less uncertain. The law of inverse squares, the absorption by the tissues and the vitality of the cells are the important factors. This will have to be decided upon future statistics based on a large number of operated and postmortem cases. We feel safe in quoting Schmitz in the statement to the effect that a dose of 600 mg. hours by gamma rays is required to kill cancer cells to a distance of one cm. To obtain the same result at two cm. would require, on the basis of the law of inverse squares alone, four times that dose, or 2,400 mg. hours. This is about the dose usually employed in cancer of the cervix, plus needles or emanation tubes if the growth has gone two cm. or farther, and this is about the maximum dose generally regarded as safe.

Suppose, for the sake of argument, that there are a few cells at the actively growing periphery of the neoplasm that are sufficiently far away not to be destroyed, but still they are partially affected, yet can recover. When they do recover they invariably grow and proliferate more rapidly than ever. The radium dose has not been quite sufficient to destroy these cells and if we could apply some other therapeutic agent to help out the radium in the destructive effect it lacks, there are, no doubt, certain cases which could be cured by both agents when radium alone could not accomplish the desired result. We have such a supplemental agent in the röntgen rays applied from the outside and concentrated upon the growth by cross firing.

The exact dose to be applied in this way is also uncertain, and for the same reasons as stated before. If we may accept a statement as reasonably true that a full therapeutic dose of röntgen rays at the skin surface as usually applied and well filtered has lost eight ninths of its efficiency at a depth of four inches, then to obtain a full therapeutic dose at a depth of four inches would require that the same dose would have to be applied through nine portals of entry and cross fired upon a deep area. If the primary lesion is that deep or deeper, and there are metastases present, a much larger number of portals of entry would be required. The exact number would have to be worked out in each individual case.

It will be seen from the foregoing remarks that the employment of radiation in the treatment of malignancy is not a matter of guesswork, but requires careful thought and judgment, experience, and a reasonable knowledge of physics.

FOOT NOTE: Since this paper was presented, various modifications of deep röntgen therapy, based upon methods recently practised by the Germans, have been employed, and the technic advocated above has been changed in detail, but the principles remain the same.

3400 SPRUCE STREET.

Report of Neuropsychiatric Work at Camp Devens, Mass.

By L. VERNON BRIGGS, M. D.,
Boston, Mass.,
Lieutenant Colonel, Medical Corps, U. S. Army,
and
MORGAN B. HODSKINS, M. D.,
Palmer, Mass.,
Major, Medical Corps, U. S. Army.

The following is a brief summary of the neuropsychiatric examination of 170,478 soldiers at Camp Devens, Mass. There were rejected for all neuropsychiatric causes 1,787 men. These examinations were conducted from early in September, 1917, until November 11, 1918, at first under the charge of Major James V. May, then, after September 28, 1917, by Major L. Vernon Briggs as chief of the neuropsychiatric service in the camp and at the base hospital. Major Briggs was succeeded by Major Morgan B. Hodskins on July 4, 1918, when Major Briggs sailed with his division for France.

The classification of diseases used is the one furnished by the Department of Neuropsychiatry of the surgeon general's office.

The first subdivision is that of nervous disease or injury. Under this heading we rejected 389 men. As the accompanying table will show, the majority of these rejections were for epilepsy. The diagnosis of epilepsy is by no means so hard as some imagine, if the patient, on physical examination, presents the characteristic mental symptoms and in addition has scars on various parts of the body and head caused by injuries while in convulsions, or if the tip and sides of the tongue are scarred; the symptoms were considered sufficient for rejection. If the patient stated that he had epilepsy and could show none of these signs, he was observed in the neuropsychiatric wards of the base hospital. The orderlies there were trained in the observation of convulsive attacks, particularly in disturbances of the tendon reflexes, and whether or not the pupils reacted to light during and after the attacks. In our experience the reaction of the pupils to light is the very best single test in the differentiation between epilepsy and hysteria. So far as we know, the pupillary reflex to light is always absent in an epileptic attack and never in an hysterical attack. The other subheadings under nervous disease and injury will readily explain themselves. The small number of cases of syphilis of the nervous system is no doubt explained by the ages of the men examined. They were rather too young to show tabes dorsalis, and no doubt most of the frank cerebrospinal cases were rejected by the local draft boards.

Under the heading psychoneurosis 249 were rejected. The cases of stammering were rejected at time of examination. The others were always observed for some time either in their organization or in the base hospital before they were rejected.

There was a total of 167 rejections under the heading psychosis. Some of these cases were rejected immediately as they came to camp with a frank psychosis. In others psychosis developed after the patient had been under military training for some time. A psychotic individual does very poorly in the army. As soon as he is subjected to military discipline he usually breaks down.

Under the heading inebriety there were fifty-seven rejections. These rejections were made after the patients had been under observation for a few days and showed the well known withdrawal symptoms. The patient listed as a case of drug addiction, opium, was addicted to the use of camphorated tincture of opium. His statement was to the effect that he would take more than a pint of this a day, and he showed well marked withdrawal symptoms. Forty-five cases were rejected for chronic alcoholism.

Under the heading mental deficiency, as one would expect, there were a large number rejected, a total of 813. These men were nearly all returned to their homes, and no doubt are living there under the same conditions prevailing before they were taken into the army. We have no comment to make on this situation. It seems to us that comment is unnecessary.

Under the heading of constitutional psychopathic state there were sixty-eight rejections. These men were only rejected after they had been observed in their companies for some time, and had proved themselves so totally unfit for military service that it was necessary to reject them.

NERVOUS DISEASE OR INJURY	
Epilepsy	261
Cerebrospinal syphilis	11
Congenital syphilis with nervous symptoms	1
Hemiplegia	7
Paraplegia	6
Tertiary syphilis with nervous symptoms	30
Multiple sclerosis	9
Multiple neuritis	10
Paralysis, facial	4
Enuresis	8
Poliomyelitis, chronic	3
Sciatic neuritis	3
Chorea	13
Migrane	1
Myotonia congenita	2
Spinal meningitis, chronic	1
Congenital speech defect	1
Hereditary tremor	2
Transverse myelitis	1
Tabes dorsalis	9
Hereditary ataxia	1
Facial tic	1
Nystagmus	1
Hyperthyroidism	1
Brachial neuritis	1
Destructive lesion of red nucleus	1
Total	389

PSYCHONEUROSIS.	
Hysteria	133
Neurasthenia	64
Psychasthenia	12
Stammering	40
Total	249

PSYCHOSIS	
Dementia præcox (hebephrenic)	79
Dementia præcox (paranoid)	31
Dementia præcox (katatonic)	11
Dementia præcox (simple)	7
Psychosis, manic depressive	25
Psychosis, traumatic	1
Psychosis, epileptic	1
Psychosis alcoholic, acute hallucinosis	4
Psychosis alcoholic, chronic paranoid	1
General paralysis of the insane	6
Psychosis, toxic	1
Total	167

INEBRIETY	
Drug addiction (morphine)	48
Drug addiction (heroine)	4
Drug addiction (cocaine)	4
Drug addiction (opium)	1
Alcoholism, chronic	45
Total	102

MENTAL DEFICIENCY	
Mental deficiency (imbecile)	258
Mental deficiency (moron)	555
Total	813

CONSTITUTIONAL PSYCHOPATHIC STATE	
Constitutional psychopathic state (inadequate personality)	48
Constitutional psychopathic state (paranoid personality)	11
Constitutional psychopathic state (emotional instability)	4
Constitutional psychopathic state (pathological liar)	1
Constitutional psychopathic state (sexual psychopathy)	4
Constitutional psychopathic state (criminalism)	1
Total	69
Total rejections	1787

Factors Concerned in the Incidence of the Contagious Diseases

By ARTHUR I. BLAU, M. D.,
New York,
Diagnostician, Department of Health

While widespread epidemics of the commoner contagious diseases are relatively infrequent, localized outbreaks of those diseases and individual occurrences of cases of contagion in different localities are comparatively very frequent. It should be borne in mind that no case of contagion arises *de novo*. Directly or indirectly, every case originates in another of the same kind. Primarily the patient is the chief source of the infection. While direct contact or proximity with the patient is responsible for the greater proportion of the contagious incidence, indirect transmission through infected clothing or other articles, or through the agency of a third person, or through domestic animals is quite possible, and often the very means of the transmission.

I shall concern myself with dealing with the practical factors responsible for the occurrences of these diseases. Most of these factors, as will presently be shown, are subject to control, and are, therefore, fortunately I may say, avoidable, and, to say the least, subject to amelioration.

A close study of the subject has revealed three fundamental causes as being responsible for the incidence of contagion. In most instances the first two, and above all the second, are the dominating influences. These three factors are: 1, Errors in diagnosis; 2, faulty quarantine, and, 3, defective disinfection.

Errors in diagnosis are responsible for a great percentage of the prevalence of the contagious diseases. This is particularly true of the milder forms of these diseases. These errors are due in most cases to the carelessness displayed in arriving at a diagnosis (1). If a child, with scarlet fever say, whose illness is diagnosed as being due to a gastrointestinal disturbance, is allowed to go to school after the subsidence of the acute signs and symptoms, we may reasonably expect secondary cases of that disease among the pupils exposed.

Recently a doctor saw a child with a scarlatiniform rash, which he diagnosed as due to ptomaine poisoning. A few days later three other children in that family became ill with scarlet fever, and subsequently desquamated in the regular way. This is but one of the many instances of mistaken diagnoses resulting in the development of secondary cases. The error is, of course, not responsible *per* *se* for the transmission of the disease. It is the lack of quarantine to which the error leads that is the active agent in the transmission.

By far the more important factor in the transmission and spread of the contagious diseases is the failure to observe proper and effective quarantine of the sick. I find this to be particularly so in the milder forms of the disease and during convalescence. Most of the secondary cases originate under just such circumstances. Scarlet fever, for example, while most contagious during the rash febrile stage, can be transmitted with almost equal facility during the subsequent stages. In fact it can be transmitted after the desquamation has been completed and the patient discharged, the source of the infection being the discharges from the nose, throat, ears, or glands. Similarly diphtheria can be transmitted long after the acute stage has passed, and the patient apparently recovered, as long as Klebs-Loeffler bacilli are present in the nose or throat, and it is well known that the diphtheria bacilli can retain their virulence indefinitely. Late infection could be avoided if the patient were kept under strict quarantine until fully recovered, and the discharges from the mucous membranes had completely disappeared.

As an illustration of what faulty quarantine may lead to, I shall cite the following: I visited two contiguous tenement houses, from whence about twenty cases of measles had been reported within a few days. By carefully tracing this indoor epidemic, I found that all the cases originated almost directly, from a case of measles in one of the apartments. This patient, a little girl, during the time that the rash on her body was fading, visited the different apartments in the two houses, playing with the children living there. All of the children thus exposed developed measles, only those escaping who already had had the disease.

The third influence under discussion, while not as poignant a factor in the incidence of contagion as the two former, is sufficiently important to be considered, even though merely an adjunct to the evil.

Not infrequently I encounter cases of contagion in premises the seat of that contagion weeks or months ago. This occurrence, in my mind, is not merely incidental. It is a late infection caused by the germ or poison of contagion still present in those premises, left over by the patient after recovery, which has not been removed or destroyed by the disinfection or renovation. This is not a mere assumption, for we know that the poison of the contagious diseases is very tenacious, particularly that of scarlet fever, and clings for weeks or months to furniture, carpets, and other household articles.

Explanation for the occurrence of contagion in different localities from time to time may, therefore, very well be found in this late infection. Presumably this infection could be avoided by a more efficient renovation and disinfection of the premises and their contents after the recovery, removal, or death of a contagious case.

The periodical exacerbation of the incidence of contagion in the cold season and in the spring can be explained, in a great measure, by the application especially of the second of the basic factors discussed. In the winter there is a violation of quarantine within and in the spring the violation is without. Assuming that there is a contagious patient in an apartment, the number and persistency of exposure to it among other children is greater in the winter than at any other season, since then children are more apt to be confined indoors. As result secondary cases are apt to be more numerous. Similar conditions prevail in the spring. With the advent of the warm weather, more children venture outdoors, and, therefore, the number of subjects exposed to a possible case out of doors is greater, which accounts for the greater contagious incidence in that season.

REFERENCES.

1. Blau, Arthur I.: Errors in the Diagnosis of Contagious Diseases, *Medical Record,* August 28, 1920.

940 Park Avenue.

Therapeutic Management of Arteriosclerosis and Its Relation to the Etiology of This Disease*

By N. PHILIP NORMAN, M. D.,
New York.

The object of this article is to describe a method of treating arteriosclerosis which seems to offer a prompter and more permanent relief for this disease than the current methods now in practice. Before describing this method it is necessary to define the cause of arteriosclerosis, as the method of treatment is the logical sequence to the theory.

The theory is that arteriosclerosis is the direct result of infection. Every infection, disease or disorder from which one may suffer, whether or not a microbic cause can be demonstrated, leaves its imprint, so to speak its cicatrix, upon the organism.

If this theory is correct, the first step is to localize and remove the foci of infection. However, infections are liable to occur in many places, and all possible sites of infection must be examined to avoid overlooking a focus which may not suggest itself because of not causing pain or distress. It is a well known fact that in many instances a dental abscess does not produce local manifestations, and it surprises us to have the x ray reveal it. This is also true of other foci. Where, then, should we always look for foci of infection? The teeth, the tonsils, the sinuses, the gallbladder, and the intestinal tract. X ray the teeth, examine closely the tonsils, transilluminate the sinuses, and, if in doubt, x ray them. If you suspect the gallbladder, do an intraduodenal drainage after the technic advocated by either Rehfus or Smithies, and culture its contents—then examine the stool to determine whether it reveals an infection and whether there is excessive putrefaction or fermentation, or both, and the type of toxic products formed.

---

*Read by invitation before the Sixth District Branch of the Medical Society of the State of New York as part of the Symposium on Cardiovascular Renal Disease, October 5, 1920, at Hornell, N. Y.

After this has been completed, one is in a position intelligently to advise what is to be done. If the teeth and colon are infected, first remove the dental abscesses and clean up the pyorrhea, and keep the mouth clean. Then clean up the colon.

I shall not attempt to detail the method of oral hygiene, as it is something with which all of you are acquainted; but there is just one fact which I must try to impress, and that is, if the teeth are badly infected it follows that the colon also is infected. This explains the failure which many of us have experienced in treating not only arteriosclerosis but many other diseases, when the dental abscess has been removed and the patient has failed to react as we had hoped or promised. The reason for this is that the infection had been passed down to the colon, and this infected area had not been explored and cleaned out.

The intraduodenal drainage of the gallbladder is quite simple. The ordinary Einhorn tube with either the Einhorn or Rehfus olive shaped metal tip is used. The tube is of soft rubber, about three eighths of an inch in diameter. The metal tip acts as a sinker. The patient is asked to place the olive on the back of the tongue, is given a swallow of water, and swallows the water and olive. The olive pulls the small tube after it. After the marking on the tube which indicates that the olive has reached the stomach has been reached, the patient is placed in the recumbent position on the right side and remains in this position for an hour, at the end of which time the olive should have passed through the pylorus into the duodenum. Then the syringe is attached and a half saturated solution of magnesium sulphate is forced into the duodenum, to stimulate the gallbladder to contract and empty its contents. The contents are withdrawn with a syringe and placed in a sterile vessel and cultured. If pathogenic bacteria are present a vaccine is prepared and given. It is even a good plan to repeat the drainage daily until the gallbladder has been thoroughly emptied of its contents. Patients do not object to this treatment.

The colon is subject to infection, not alone of its contents but of its tissues. Lane has called attention to kinks and adhesions, and asserts that they produce intestinal stasis and autointoxication. Hertz (1) states that inflammation of the colonic walls, which he calls catarrhal colitis, or pericolitis, creates adhesions, and then the kinking comes about. Herter (2), in his exhaustive researches, ascribes autointoxication to bacterial infection of the contents of the colon, and mentions inflammation of the colonic tissues as a secondary issue. Undoubtedly, the reason for these conclusions is that the intestines have been practically unstudied because of the natural abhorrence of their contents, and in consequence very little is known of the pathology of these conditions. However, they all agree that inflammation is present. If inflammation is present there must be an infection, as one could not justify the inflammation on mechanical or chemical grounds alone.

Recent advances in the knowledge of intestinal infection seems to establish the fact that the tissues of this organ are infected. Autointoxication is a result of this infection, as are adhesions, kinks and loculi.

The organism most usually associated with arteriosclerosis and colonic infection is the gas bacillus or what is technically known as Bacillus aerogenes capsulatus. It is a spore forming anerobic organism with hemolytic properties and capable of producing great amounts of gas on either a protein or carbohydrate residue. In some cases it is associated with strains of colon bacillus which are great indol formers, and, on the other hand, in many instances they seem to have annihilated the colon bacillus and practically all other microbic life except some coccal forms, and the Bacillus putrificus. When this is the case, butyric acid is formed in great excess, and in these cases indicanuria is absent. In some instances the infection appears chiefly streptococcic combined with the colon bacillus.

However, as a rule, the cultures are predominated by the gas bacillus. There are cases of proteus infection of pyocyaneus and staphylococcic infection; but in the majority of instances the combination of aerogenes capsulatus, Bacillus putrificus and the coccal forms seem to produce the mischief.

Herter has classified the types of chronic intestinal putrefaction produced by bacterial infection as the indolic type, the saccharobutyric type, and the mixed or combined indolicsaccharobutyric type. The studies of Eggstein and myself have led us to believe that, while this classification is not as elaborate as some recently advocated, it has the advantage of being simple and practical, and fits the average need. Any one of these types of infection may be found to be either the partial or sole source of the arteriosclerotic degeneration. However, the saccharobutyric type and the mixed type are by far the most frequently found.

In our routine work the gas production of the infecting organism is studied on four sugar bouillon bile tubes containing dextrose, levulose, saccarose and lactose. In the cases in which the colon bacilli are very much diminished or absent, the gas production falls very low, and this is often the case clinically in this type of infection. In fact, in this type of infection there are some who strongly advocate the implantation of pure cultures of the colon bacillus.

The gas bacillus infection gives the feces a peculiar character. Under anerobic conditions these organisms are capable of attacking carbohydrates and proteids in a vigorous manner. In either instance there is a formation of much butyric acid and the titration demonstrates a very high acid content. There may be an associated production of proprionic, valeric and caproic acids. The odor of the stools is highly offensive and suggests butyric acid. When the attack is centred on carbohydrates there is a marked production of gas, and while the same holds true for proteid putrefaction, the amount of gas is somewhat less.

In some instances the fatty acids are neutralized by bases which are formed during the course of putrefactive processes, and this is especially true of ammonia which forms ammonium butyrate in excess which acts as an irritant and produces a diarrheal condition which has been formerly explained as Nature's effort for ridding the bowel of retained fecal products (2).

Some of the effects of this type of putrefaction is to irritate and cause a desquamation of the epithelial cells of the big gut. Patients who suffer from this type of putrefaction do not tolerate carbohydrates and acids, for excessive diarrhea and flatulency is produced. On a proteid diet they suffer almost as much, and little can be accomplished by diet in this type of infection.

I have recently studied just such a case, in which acid, sugars and carbohydrates created excessive gas and produced a diarrhea, while the proteids obstinately constipated and produced enough gas to distress the patient constantly. It is obvious that dietary efforts could not accomplish anything in this instance. Patients with this type of infection regain strength very slowly in spite of their sometimes healthy appearance and appetite. Premature senile manifestations are often evident, and the loss of general vigor is likely to be associated with a depression of sexual power.

In the mixed type there is always a marked indicanuria, and in many instances an anemia with mental depression and irritabiliity. However, in both types of infection the organism to be combated is the gas bacillus, and I shall attempt to outline a method which, while not perfect, at least offers a more effectual means for creating an environment unfavorable for the growth of the aerogenes capsulatus, than the other methods now in use.

To begin with, the colon must be regarded as an infected area. Being an infected area the logical treatment is to prepare it so that it will have free drainage. We prepare it by washing it out, thereby removing the infected contents and allowing the infected walls to drain freely. When this has been accomplished we create within the colon an environment unfavorable for the growth of pathogenic bacteria.

The technic of this method will be briefly described. First, determine the type of infection with which you have to deal. Attempt to determine the deformity of the colon, especially that related to the sigmoid and descending colon, by abdominal palpation, percussion and proctoscopic and sigmoidoscopic examination, and later when irrigating by the sense of touch which one acquires by passing a colonic tube. A soft rubber tube from three fourths to seven eighths of an inch in diameter and forty inches in length is used. Two percolating jars are necessary for the irrigating solution, and each should hold two gallons. A three way valve in one position allows of the flow of the fluid from the percolating jars into the colon, and, when reversed, cuts off the jars and allows the fluid to siphon from the colon into the waste jar. The solutions used depend upon the stool examination. For instance, if highly acid, a sodium carbonate solution is used until the stool is rendered neutral or alkaline. If it is not very acid the ordinary chlorazene solution is used. In the gas bacillus infections a peroxide of hydrogen or a one to 1,000 potassium permanganate solution seriously affects the growth of the anerobic organism. If peristalsis appears diminished and incapable of ridding the colon of the softened fecal matter, the use of about a half ounce of tincture of iodine well up in the sigmoid will be productive of startling results. If there is much mucus formation, a sodium chloride and bicarbonate solution is used until it disappears. Then irrigate, using from two to three gallons of solution every day, until your tube passes through the sigmoid, into the descending, and, if you are fortunate, it will sometimes slip into the transverse colon. This irrigation will remove the fecal accumulations from the loculi and give the infected mucous membrane a chance to drain. It usually requires from ten to twelve consecutive daily irrigations to cleanse the colon, and when this has been accomplished you are ready to implant the colonic tract with live, uncontaminated cultures of the Bacillus acidophilous. This bacterium, being lactic acid formers, creates an environment unfavorable for the growth of the pathogenic organisms, and it also stimulates the diseased mucous membrane to heal. The culture is kept up until a good growth is obtained. After this the acidophilous is implanted about once every ten days until permanency of growth is assured.

When the patient's alimentary tract has been thoroughly disinfected, and granting that the possibility of a syphilitic infection has been eliminated, it becomes logical to assume that the patient has been given every chance of staying and improving the arteriosclerotic process. This has certainly been borne out by my results, and while I recognize that some of the work is yet crude, it offers more permanent and prompter results than the methods usually employed. The readjustment of the blood pressure level is accomplished slowly, and this readjustment is in keeping with the metabolic compensation necessary.

The advantage is that the cause of the arteriosclerotic process is attacked directly and removed, allowing the organism to eliminate the toxic products through natural channels and at a natural pace.

The disadvantages are the following:

1. At least forty-five minutes must be devoted to each patient.
2. The treatment is expensive.
3. A physician must give the irrigation, for it is impossible to train a nurse in the technic, for which an exact knowledge of the anatomy of the whole colon and an appreciation of the deformities that may be present, as well as an exact conception of what infection means, is necessary.
4. It requires an exhaustive amount of exact and arduous laboratory work.

REFERENCES.

1. HERTZ: *Constipation and Allied Disorders.*
2. HERTER: *Bacterial Infections of the Digestive Tract.*

Influenza Versus Typhoid Fever

By BERNARD FRANKEL, M. D.,
New York.

For a number of years I have been studying, among other types, the gastrointestinal forms of influenza, and found them presenting many symptoms simulating other diseases, for which they are readily mistaken.

Thus in 1916 I described, under pseudoscarlatina (1), a case in a boy of six. Its onset with sudden, with a bright scarlet rash over the entire body, high fever, and sore throat. Within twenty-four hours all symptoms disappeared and later gave way to respiratory symptoms of a gradually developing bronchopneumonia—which cleared up in a week—and also to symptoms simulating typhoid fever, such as diarrhea, with small stools, remittent fever, enlargement of the spleen, and a heavily coated typhoidlike tongue. The Widal test was negative, and with intermissions and relapses the boy made a slow recovery. Dr. Emmett Holt, who saw the patient with me, corroborated my diagnosis of influenza which so closely simulated typhoid fever as to be easily mistaken for it.

During the 1916 epidemic of poliomyelitis I described cases of epidemic gastroenteritis of influenza (2), which often preceded or accompanied attacks of infantile paralysis, and were sometimes ushered in by such severe vomiting and diarrhea as to be mistaken for ptomaine poisoning, while in other instances they presented symptoms of severe enterocolitis or even of dysentery. But during the past year or so the gastrointestinal cases of influenza that became especially prevalent showed symptoms so closely simulating typhoid fever as to greatly puzzle the most astute diagnosticians. Their onset was often preceded by what the patient described as an ordinary cold or by anorexia, extreme exhaustion and profuse perspiration—a group of symptoms which I characterized as those of latent grip (3).

It was usually marked by nausea, vomiting and diarrhea, with small, brownish, watery stools accompanied by griping. The tongue soon became heavily coated, not unlike that of typhoid. The temperature, more or less continuous for about ten days or so, often showed morning exacerbations of 103° F. or more, and evening remissions, or vice versa, but as a rule was not accompanied by a corresponding acceleration of the pulse rate; it also lacked the characteristic regularity of typhoid fever, being frequently interrupted by sudden and marked intermissions when the temperature dropped to almost normal, only to be followed by violent exacerbations.

The stools retained their watery character and brown color for days or weeks, and only as they regained their normal color and consistency did the tongue also shed its heavy coating and gradually assume its normal appearance.

Following are some of these cases I observed:

Case I.—In March, 1920, my little girl, Olga, seven years old, after a few days of listlessness and anorexia, showed a temperature of 103° F., pulse 96, respirations 28, with nausea, vomiting, and diarrhea, the stools being small, watery, of a brownish color, and accompanied by griping; the tongue was heavily coated, and soon assumed the appearance of that of typhoid fever. The fever persisted for ten days, going up to 104° F. in the forenoon and decreasing in the evening. Several specialists who were consulted strongly suspected typhoid fever, although Widal tests were negative; but gradually her temperature came down, the stools became normal, the tongue cleared up, and she made a perfect recovery.

Case II.—About two months later I was called in to see Miss I. A., twenty years old, of this city, who was taken sick about five days previously with gastrointestinal symptoms similar to those of little Olga, a temperature of 103.6° F., pulse 90, respirations 22, and a typhoidlike tongue. The attending physician made a diagnosis of typhoid fever, but within the next few days her temperature came down, the stools and tongue regained their normal appearance, and she made a rapid recovery.

Case III.—Last October, Miss E. K., aged twenty-one years, of this city, after complaining for a few weeks of anorexia, extreme exhaustion, and profuse perspiration upon exertion and also at night, suddenly showed a temperature of 102.6° F., with nausea, vomiting and diarrhea, with griping and small, brown, watery stools; her tongue became heavily coated, and later sordes developed on her lips. Although Widal tests were negative and there was no enlargement of either liver or spleen, the case was thought to be one of typhoid fever by a diagnostician who was consulted, but the subsequent course of the disease disproved that opinion, and after several very marked intermissions the remissions became more pronounced, leading to recovery after ten to twelve days.

Case IV.—A few days ago I visited in one of the leading New York hospitals a young man aged twenty, who gave a history of having been taken sick nine days ago with fever, severe headache, and extreme weakness; after a couple of days the symptoms abated to such an extent as to permit him to return to his occupation for one day, but the following day he was down again with a temperature of 103° F. in the forenoon and 104° in the evening, pulse 88, coated tongue, and general apathy; the Widal test was negative, there was a leucocytosis of 13,000 with 73 per cent. of polynuclear cells, but no enlargement of either spleen or liver and no other pronounced symptoms or physical signs developed, although the high temperature continued for a few days longer.

The visiting physician of the hospital, a diagnostician of high esteem, strongly suspected the case to be one of developing typhoid fever, and the house physician mentioned, in the course of our conversation, that they had treated a number of similar cases in the hospital with temperatures of 103° to 104° F. and symptoms that lead to diagnoses of probable typhoid fever, but that the patients usually recovered in less than two weeks without showing any enlargement of either spleen or liver or any other pronounced symptoms of typhoid, and, the Widal tests remaining negative, they had to class them eventually as "pyrexias of unknown origin."

CASE V.—About December, 1920, D. K., aged fifteen, had what she described as an ordinary cold followed in a couple of days by nausea, vomiting and diarrhea, with a heavily coated typhoidlike tongue and a remittent temperature of about 103° to 104° F. This case was also diagnosed as typhoid, and the symptoms, though more pronounced, followed very much the same course as in the preceding case of E. K., leading to an ultimate recovery which, however, was more protracted.

In most of these cases, with exception of the one described under pseudoscarlatina, there was no enlargement of either liver or spleen, no rose spots, and in none of them were the Widal tests positive; they were not marked by any headaches, and the fever was frequently interrupted by marked intermissions. Notwithstanding all this, however, the prolonged remittent fever, pronounced gastrointestinal symptoms, and especially the typical typhoid tongue, made most of the examining physicians strongly inclined to diagnose them as cases of typhoid fever, because, as I think, medical literature to date presents no records of nontyphoid cases showing such typhoidlike groups of symptoms.

It is, therefore, in my opinion, incumbent upon us to make a thorough study of these cases, and bear the above described facts in mind before arriving at a positive diagnosis of typhoid fever under similar circumstances.

REFERENCES.

1. FRANKEL, BERNARD: Pseudoscarlatina, NEW YORK MEDICAL JOURNAL, October 21, 1916.

2. *Idem:* Gastroenteritis, Infantile Paralysis, and Influenza, *ibid*, December 2, 1916.

3. *Idem:* Influenza Versus Tuberculosis, *ibid*, January 27, 1917.

815 PARK AVENUE.

Postgraduate Beginnings in This Country*

By THOMAS E. SATTERTHWAITE, M. D.,
New York.

In the year 1872 an effort was made by several New York medical men who had studied abroad, to develop postgraduate medical teaching in New York city. It had been the custom with a certain class of graduates, after taking hospital courses at home, to visit various foreign medical centres, spending from six months to two years at one or more of them. Berlin, Vienna, sometimes Prague, Wurzburg, Paris, London, and Edinburgh were then the principal nuclei for postgraduate study. The most popular centre for this work, however, was Vienna. More could be seen and accomplished there in a given time than in any of the other medical centres of the world, for more nationalities met there than in any other city of Europe.

Postgraduate work is done best in large centres of commerce, particularly where there is an active foreign trade, involving intercourse with various parts of the world and so bringing to the center a great variety of disease. Insofar as New York city continues to maintain such a position her medical clinics will attract patients and medical men, for where there is the greatest variety of clinical material, there will naturally be the greatest number of medical men, seeking to derive instruction from the unusual opportunities offered them.

It was thought that an important movement toward founding a centre for postgraduate teaching in America would follow incorporation of the Alumni Association of the College of Physicians and Surgeons which occurred in 1873. In fact, those concerned in this effort hoped that its regular or undergraduate faculty would favor the establishment of an extramural corps of teachers for physicians only. This idea was taken from the extramural or postgraduate schemes of the Scotch universities. The writer was one of the incorporators. The undergraduate faculty, however, was opposed to this project, which would have made the members of the postgraduate faculty appointees of the Alumni Association. Dr. Albert H. Buck was one of the leaders in this project. Shortly afterward, in 1875, an effort was made to have the De Milt Dispensary a centre for postgraduate work. A teaching corps was created for this purpose, printed schedules were issued, and in 1877 and thereafter for some years reports of their activities were published regularly in the NEW YORK MEDICAL JOURNAL. The location was excellent. It was central and easily accessible from outlying districts such as Long Island and New Jersey, more especially. Both medical students and physicians attended these courses.

The following men constituted the teaching body at the De Milt Dispensary when it was in full operation, between 1877 and 1879: G. M. Lefferts, H. T. Hanks, L. D. Bulkley, P. Brynberg Porter, Robert Campbell, Daniel Lewis, Lawrence Johnson, W. E. Bullard, A. A. Smith, N. B. Emerson, John S. Warren, C. E. Billington, and Thomas E. Satterthwaite. Of these, so far as I know, only two are living—Dr. Bulkley and I. Dr. Bulkley had been teaching at this dispensary and inaugurated the movement.

Some of the courses were very successful, and the teachers drew large classes. This particular scheme was patterned after that of the Allegemeine Krankenhaus system of Vienna, afterward improved on by a rival, the Poliklinik. In Vienna the teaching was centralized, the clinical material was abundant and varied, while the teachers were probably the best in Europe. In fact, eminent men were called to the several chairs from various parts of Germany and Austria, and from Italy as well. To develop the New York postgraduate scheme further in a similar manner, an effort was made to interest the best teachers in the three great medical schools of that day, the University Medical School, Bellevue, and the College of Physicians and Surgeons. Dr. Thomas T. Sabine was a representative of the latter, Dr. Alfred L. Loomis of the University, and Dr. William T. Lusk of Bellevue. Meetings were held from time to time, but all efforts toward founding a postgraduate institution were unavailing. It did not seem possible to raise enough money for the purpose. Notwithstanding, the institution to be had a name. It was called the New York Polyclinic. I was interested actively in the movement. It was not, however, until 1882 that a fundamental step was taken. At this point we should go back and state that in 1875, while the De Milt plan was developing, postgraduate medical teaching was also being organized by another body within one of the three undergraduate colleges, viz., the University. In that year its socalled supplementary faculty was formed for the purpose. It planned, however, not only to have such modifications of the system as separate classrooms for physicians, separate fees for courses, but also a share in the government of the College. The undergraduate or regular faculty objected. Consequently, in 1882, the supplementary faculty resigned in a body, after an existence of seven years.

---

*Read in part before the Historical Section of the New York Academy of Medicine, December 10, 1920.

The most active leaders in this secession were ex-Surgeon General William A. Hammond, D. B. St. John Roosa, Frederick R. Sturgis, Montrose A. Pallen, and Henry G. Piffard. At first they had considered forming a fourth undergraduate medical college, and overtures were made to Princeton, and then to Cornell, but the responses were unfavorable. It was now that the name Postgraduate came to the front. The scheme, however, was actually based on that of the New York Polyclinic. But the latter name was not available because it had already been adopted by the institution that was about to be the New York Polyclinic of 1882.

The New York Post-Graduate Medical School was the name adopted, and in an official announcement made in its journal, the *Post-Graduate* (of December, 1912), April 4, 1882, was given as the date of its birth. On June 15th another step was made toward its organization, at the residence of Dr. D. B. St. John Roosa, while on June 27th, at the residence of Dr. W. A. Hammond, a committee on organization was effected at a meeting when Dr. Hammond was made chairman. I was made secretary of the organization committee. Dr. Frederick R. Sturgis, shortly afterward to be secretary of the faculty, was the third member of this committee present. It was this committee which directed its policy in the troubled waters through which it had to pass during the first year of its existence. In fact, the committee on organization continued to operate until November 22, 1883. Fortunately the reports of its secretary, twenty-four in number, have been preserved by Professor Samuel Lloyd. Records of meetings previous to June 27th, however, are not at present available. Efforts to secure them have been unsuccessful. The announcements of the opening of the school are to be found among the advertisements in the NEW YORK MEDICAL JOURNAL of August 19 and 26, 1882. The date of the opening was the 6th, or the first Monday in November, 1882, and the following were advertised as members of the teaching faculty: Dr. James L. Little, Dr. W. A. Hammond, Dr. D. B. St. John Roosa, Dr. Clinton Wagner, Dr. Henry G. Piffard, Dr. Frederick R. Sturgis, Dr. Montrose A. Pallen, Dr. Thomas E. Satterthwaite, Dr. Mary Putnam Jacobi, Dr. Edward C. Spitzka, Dr. William G. Morton, Dr. Herbert G. Lyttle, Dr. William H. Porter, Dr. Edward T. Ely, Dr. Whitfield Ward, Dr. W. T. Alexander, Dr. Henry Hughes, Dr. M. Josiah Roberts, Dr. Seneca D. Powell, Dr. Graeme M. Hammond, Dr. John H. Nesbit, Dr. C. A. Van Ramdohr, Dr. G. Fairfax Whiting, Dr. S. S. Burt, and Dr. J. Hilgard Tyndale.

The public opening of the New York Post-Graduate School, as it was called at the inception of the enterprise, took place at Chickering Hall on November 4, 1882 (*Medical Record,* November 18, 1882), two days before it opened for students. The name New York Post-Graduate Medical School and Hospital was assumed in 1884, the year it was incorporated.

The New York Polyclinic, as it was called in 1882, was actually a continuation, certainly so far as the name is concerned, of the New York Polyclinic that had for years been a skeleton organization, of which Dr. W. T. Lusk and Dr. F. A. Castle, with the writer, had been members. But at its origin as the Polyclinic of 1882, these names were absent. I am able to say that Dr. Virgil P. Gibney told me (on October 22, 1907) that in the spring of 1882 he received from me the scheme of the original Polyclinic. It formed the basis of the Polyclinic of that year.

The *Medical Record,* in the advertising columns of its issue of October 28, 1882, had the announcement of its opening which was to take place on Tuesday, November 7th. The Post-Graduate had opened on the day previous. It is quite likely that the Polyclinic of 1882 was officially organized earlier than the Post-Graduate, because the paper organization of that name was, as I have shown, in existence at that date and also some years earlier.

The original faculty of the Polyclinic comprised Dr. James R. Leaming, Dr. John H. Ripley, Dr. E. Darwin Hudson, Dr. Louis Elsberg, Dr. Landon Carter Gray, Dr. Richard C. Brandies, Dr. A. R. Robinson, Dr. Edward B. Bronson, Dr. George R. Fowler, Dr. John A. Wyeth, Dr. A. G. Gerster, Dr. Paul F. Mundé, Dr. W. Gill Wylie, Dr. Emil Gruening, Dr. David Webster, Dr. V. P. Gibney, and Dr. Charles F. Stillman. It was a fine array of teachers, who were eventually to be known through the length and breadth of the land. Numerically the teaching body was smaller than that of the Post-Graduate, seventeen as compared to twenty-five.

The two bodies were strong and effective competitors, but the rivalry was always friendly. Whatever hostility there was came from the undergraduate institutions of the city, for, during its earlier years, their opposition was active and unremitting.

The Polyclinic opened in a building near the corner of Third Avenue and Thirty-fourth Street; the Post-Graduate near the corner of Twenty-third Street and Third Avenue, where it secured accommodations in the College of Pharmacy. Inasmuch as courses in pharmacy were given in the evenings and those of the Post-Graduate in the daytime, these two institutions were able to occupy the building jointly. It is a fitting opportunity here to acknowledge, with sincere thanks, the very important aid given to this institution by the College of Pharmacy, which also facilitated its work in various other ways.

The only pecuniary capital of the Post-Graduate at its beginning was a fund created by a contribution of fifty dollars each by the several members of the faculty. One important and essential element on which its future success was largely based, was the scheme to have all the clinics and demonstrations, as far as practicable, under one roof, so that as little time as possible would be consumed by the course students in going from one teacher to another. A special feature, also, which probably was essential to its success, was the fundamental principle that control should be permanently in the hands of the medical profession, rather than of outsiders. The Post-Graduate became popular immediately. At the end of a year a hundred physicians had matriculated; it had no debts, but had a credit in its bank. It has been stated that, prior to the time these two institutions opened their doors in New York city, another of a similar kind had been opened in St. Louis. I have never been able to verify this report. At any rate, it must have had a short existence.

As a proper tribute to the one man who, of all others, contributed most to the eventual success of the Post-Graduate, it is to be said of D. B. St. John Roosa that, without his ability, intelligence and untiring devotion, it would probably have succumbed, so many were the difficulties and so great was the opposition it encountered. And yet, it is equally true that this enterprise received the first impulse and direction at the date of its organization from the farseeing and comprehensive brain of Dr. William A. Hammond. The latter devised plans, the former carried them out. It was a strong combination. The New York Polyclinic was also successful from the first, and the man of all others who made it so was Dr. John A. Wyeth.

These two movements of the year 1882 have been properly recognized by our profession as marking great advances in educational methods, supplying needs that had not heretofore been met. This is shown by Polk's Register of 1917, which stated that at that time there were fifteen postgraduate institutions in this country, while, in addition, twenty-one medical colleges were advertising postgraduate courses.

7 East Eightieth Street.

Classification and Segregation of Male Inmates in New York City Prisons

By JAMES A. HAMILTON, Ph. D.,
New York,
Commissioner of Correction.

Modern penology emphasizes measures for the prevention of crime and the reformation of the criminal, and minimizes the resort to measures solely for the punishment of the offender. Formerly, before an attempt was made to classify and segregate criminals, the prisons presented a picture that was deplorable. Criminals of every conceivable type were thrown promiscuously together; the youth whose offense was often trivial served his term in the company of the most desperate criminal. The mental defective soon became the ready tool of the wiser inmate, to be the cat's paw for him in prison and to continue as his tool for the perpetration of serious crimes after release.

It is readily seen that prison institutions, supposedly correctional in nature, were, in reality, schools for crime. Normal individuals were compelled to live with those having loathsome disease, and the old and infirm mingled in this heterogeneous population.

The old time wardens realized that some sort of classification was necessary for the sake of discipline; and, that they might more easily administer their prisons, they accordingly made a classification of those who were unfit to work and those who were able to work.

From a purely economic standpoint we see the necessity of a thorough classification and grouping. The enormous amount of money that is spent each year for the custody and care of criminals demands a thorough and scientific investigation as to the cause, and the developing of means for the eradication of crime. This is impossible unless we begin to study the criminals in groups.

Of paramount importance is the physical condition of the inmate. Assuming that we cannot have a healthy mind without a healthy body, our first endeavors have been to put the individual in as nearly a normal physical condition as possible. For that reason the inmate, on his arrival, is sent to the physicians for their opinion. One of the greatest menaces to institutions is epidemics of contagious diseases. For this reason alone it is imperative that there be a reception hospital. It is necessary, also, that it be placed within easy access to the city in order that we may retain the valuable services of our medical board and consulting staff. The different branch hospitals were developed only after careful study, and the sites were selected on account of their particular adaptability. Formerly, treatment for drug addiction was given at the penitentiary hospital at Blackwell's Island. A better conception of the treatment was responsible for the transfer of these cases immediately to Riker's Island, where Robert Barr is warden. It not infrequently happens that a man brought to the reception hospital primarily for drug addiction is found to be suffering from an infectious disease. It has not been found practical to maintain at Riker's Island a general hospital for the treatment of patients suffering from drug addiction having complicating conditions needing immediate attention. These patients are then retained at the penitentiary, and receive their cure there and treatment for whatever other condition may need attention, and are then sent to Riker's Island for their after care.

The policy of maintaining at Riker's Island the hospital for the treatment of uncomplicated cases of drug addiction has had a very favorable effect on the treatment of these cases. The resident physician, Dr. Stuart N. MacVean, devoting as he does practically all of his time to these cases, has developed an expertness that has been productive of excellent results. The food is good and wholesome, and is prepared in a very palatable manner, and there is an abundance of everything. Situated as the island is, the climatic conditions are as nearly perfect as can be obtained in this zone. Graded exercises are given these men as they are carried through the cure, from police duty around the dormitories to the heaviest work on the farm.

This group of patients, sent really for hospital care, are properly segregated from the prison, as no punitive measures are intended. They are, therefore, placed in the best surroundings, receive very efficient treatment, and are restored to health. Their mental attitude changes, they become normal, their viewpoint is different, and hope and ambition take the place of the dejection and despair that accompanied them on their entrance into the reception hospital.

We remember the miserable wretch that confronted us upon admission, a really contemptible being with no manhood, no stamina, selfish, intolerant and quarrelsome. When we see the same individual leave the institution with a weight increase of forty or fifty pounds, ruddy of complexion, anxious to get to work, with profuse apologies for his impatience at the beginning of the treatment, we realize that the good done is immeasurable.

Hart's Island, on account of its facilities for the open air treatment, has continued to be the branch hospital devoted to the care of tuberculous patients. We frequently find cases of drug addiction complicated by tuberculosis. The resident physician at Hart's Island, Dr. Edgar C. Joyce, is an expert on tuberculosis, and these cases are transferred there that they may have his expert opinion as to the proper time to withdraw them from the drug completely.

In location the tuberculosis hospital is ideal. It stands apart from the other buildings, and has plenty of light and air. This hospital is a one story structure of concrete blocks, and is the product of convict labor. The patients are kept out of doors as much as possible, except when the weather is inclement. They do light work in their own vegetable garden. The garden has been productive and has furnished the patients' table. They have a special diet of eggs, milk and butter. As a result of this fresh air treatment, occupation, wholesome and nourishing food, and rest, tuberculous patients improve physically and mentally.

The tuberculosis hospital has accommodations for forty-one patients. The patients have the best of bedding, and constant care is exercised to keep their beds in first class condition. The bed linen is changed twice a week, and more often if necessary; the blankets are aired daily and changed frequently. Further, patients bathe twice a week, and more frequently if necessary. Their linen is changed twice a week. Once a month each tuberculous patient undergoes a thorough physical examination.

Fifty per cent. of the cases are arrested, or, as the layman would say, are cured. This means that the destructive activities subside, the active symptoms disappear, the patient increases in weight, and particularly shows this improvement in his general appearance. Some have gone forth as new men.

Another group of cases taken out of the prison atmosphere included the old and infirm, the blind and helpless. While not overlooking the justice of their commitment, still they cannot but excite our sympathies. If we can remember the old men as we used to see them mingled with the general population, victims always of their stronger companions, generally the butt of practical jokes, unable to defend themselves against the pranks of their fellow inmates, sometimes having to be helped to the mess hall, we cannot but feel that their few remaining days should have as many comforts as possible.

Accordingly a number of shacks were remodelled, and practically an old men's home built on a high prominence at Hart's Island overlooking the bay. The situation is ideal, the buildings are warm and clean, the beds comfortable, and the food good, nourishing, and plentiful. The luxuries are few, but the comforts are many, and they live their time here in peace and comfort. It is an ideal situation for these old derelicts who are not really in need of punishment, but who should be kept from society.

There has been set apart at the Penitentiary a tier for the exclusive use of the syphilitic cases, where they receive the most approved treatment under the supervision of Dr. S. Pollitzer, a syphilologist of international repute. We cannot calculate the amount of good this has been to society, in general, and we have the hearty approval of the United States Public Health Service for insisting that these cases be treated while in the institution.

The gonorrhea patients form still another class set apart and kept isolated from the prison population, who are receiving the most approved treatment. Here again the Department of Correction is performing a service to the community that only those who know conditions can fully appreciate.

These classifications recommended by the physicians have taken from the prison a large percentage of the population. The rest of the inmates are then studied with a view to their adaptability at the various institutions. They are individually interviewed by the warden, Joseph A. McCann, and where the physicians recommend it, they are retained at the penitentiary for further study as to their mentality. This study continues at times in the work gangs where their behavior is watched and their peculiarities are noted. Sometimes no signs or symptoms of mental abnormalities are noticed for a long time, and they are transferred to different institutions only to be returned at a later date with a note from the resident physician of that institution giving his observation.

The reformatory type is picked out and often rejected after study of the individual at the penitentiary when his true status is known. Those who have been determined to be eligible for the reformatory are sent to that institution, where they receive all the benefits of education, environment, and training in character building, that is afforded at New Hampton Farms. Those who are loath to avail themselves of the opportunities there, are transferred to the penitentiary for further study.

The majority of the returned cases are sent to Hart's Island where the manufacturing industries are located, there to learn a trade, to be kept occupied, and to be fitted during their incarceration to earn an honest living when released.

The recent installation of modern machinery at the industrial shops has kept this department abreast of the times and gives the inmate the opportunity to take a position as an experienced man with a big concern immediately on his release. The modern shoe shop and knitting mills, with their intricate machinery, are a never ending source of wonder to visitors, and not a few of the boys have had their minds led from pernicious channels into the delights of mastering the confusing details of these delicate machines. While the inmate at Hart's Island is not of the specially selected type seen at New Hampton Farms, he is a representative of a group for which we are very hopeful; and we are convinced that manual training for a certain type is far more efficacious in diverting the criminal trend than dry and unappealing courses in ethics and academics in general.

The disturber and the incorrigible, those who are defiant and like to pose as heroic bad men, are kept at the penitentiary under discipline sufficient to teach them the principles of order and respect for the law.

An endeavor has been made to segregate the mental defectives and groups have been formed. They are kept apart from the others and are given tasks corresponding to their capacities. This has been a great advance; not only has the discipline in the prison been better but the whole atmosphere has changed. Arrangements have been made with Dr. Max G. Schlapp whereby our study of these criminals, with especial reference to mental defectives, will be refined. We favor a separate institution for criminal mental defectives. They are not properly placed in a penal institution nor is it desirable to put them into insane asylums. This segregation would remove at least twenty per cent. of criminals. They are not real criminals, yet need constant custodial care.

The frankly insane are, of course, not kept in the prisons. As soon as it is established that they are insane, they are sent to Dannemora or to Matteawan.

Those with homosexual tendencies also form a group that are completely isolated and retained at the penitentiary.

The Department of Correction has gone considerably farther than the law requires. Not only is the youth separated from the recidivist and hardened offender, but a more refined classification is being made. At New Hampton Farms, where Supervising Warden, Henry O. Schleth, is in charge, the reformative type is again classified as to age and mentality and not only are courses given in the English branches, but trades are being taught to inmates adapted to them. The boys gradually progress to the honor camps at Greycourt and Warwick.

To recapitulate, the following gross subdivisions are noted:

- Reception and Classification
  - Hospital
    - Drug Wards, Riker's Island
    - Tuberculous Wards, Hart's Island
    - Syphilitic Wards, Penitentiary, B. I.
    - Gonorrhea Wards, Penitentiary, B. I.
    - General Medical Wards, Penitentiary, B. I.
    - Surgical Wards, Penitentiary, B. I.
  - Reformatory
    - New Hampton Farms
      - Youth
        - English
        - Trades
      - Adult
        - English
        - Trades
    - Warwick Dairy Farm (Honor Camp)
    - Greycourt Farm (Temporary Honor Camp)
  - Custodial Prisons
    - Hart's Island
      - Manufacturing Industries
      - Trade Schools
    - Penitentiary
      - Incorrigible
      - Short Sentence
      - Homosexual
      - Mental Defectives

The classification and segregation of criminals has accomplished wonders that are almost unbelievable. The old prisons, veritable "Bedlams" that only a Dickens could appreciate, have been transformed into institutions that are physically and morally clean, orderly, and characterized by an atmosphere of cheeriness. With these dynamic changes in the ascendency, we are able to undertake the intensive study of the really important problem, the redemption and reclamation of each individual prisoner.

Epinephrine Content of the Suprarenal Glands in Anaphylaxis.—Maurice I. Smith and S. Ravitz (*The Journal of Experimental Medicine,* November, 1920) found that the epinephrine content of the suprarenal glands in sensitized and in shocked guineapigs and rabbits does not materially differ from that of normal animals.

Editorial Articles

PLAGUE STALKS ABROAD

Plague, the age-old scourge of humanity, is today a world wide threat against international commercial relations. About thirty years ago it emerged from the comparative isolation of central Asia and has in turn effected a landing at most of the important ports, until at present by its geographic distribution it overshadows all the other epidemic pestilences. In India alone it has killed eleven million persons in the last quarter century. To a large extent, the substitution of the large, relatively speedy steamship for the sailing vessel is responsible for this, because the former is able to move rapidly and to more easily transport infected rats from port to port. Under the conditions of modern commerce, it is possible for an infected rodent to start a train of infection on board a ship which by reason of the short time between ports may arrive and discharge plague rats before the exhaustion of the infecting material. Thus a steamer may carry the disease long distances, a feat which the slow sailing ship could not accomplish.

So far as the world spread of plague is concerned human beings may be considered negligible factors of distribution. Rats, on the contrary, are the all important agents in spreading plague, and if infected rats are landed in an environment where rodents abound, they almost inevitably pass the disease to other rats, thereby creating a focus from which plague will spread to the interior or to other ports by the migration or transshipment of living plague infected rats. Eventually these infected animals will occupy the same environment as man and their infected ectoparasites will attack human beings, thus superimposing a plague epidemic upon a plague epizootic. A quarantine, with all its disastrous results to commerce, follows and ships are diverted to other routes to the great and perhaps lasting injury to trade.

A study of the map of the world in connection with the present distribution of plague is illuminating. The Gulf coast of the United States, the ports of Vera Cruz and Tampico in Mexico, the eastern coast of South America as far south as Buenos Aires, and the western coast as far south as Antofogasta, Chile, must be considered infected. In Europe, Paris, Marseilles, Fiume, Catonia, Athens, Saloniki and Constantinople have reported plague within the twelvemonth. It exists in Algiers, Egypt, British East Africa, Senegal and in the Union of South Africa. Mesopotamia, India, Ceylon, the Dutch East Indies, Indo China, Siam, the Straits Settlements and China are infected. In other words plague encircles the globe, following the international trade routes with a consequently stupendous economic loss.

Relief from the threat will come only by international warfare against the rat, his permanent isolation from the environment of man, and the prevention of his migration. In the present depressed condition of world finance, ports are extremely loath to spend money in ratproofing even where plague actually exists, yet it would be a great economy in the long run to protect such places permanently against plague. The periodic fumigation of ships at United States ports and at the Panama Canal, the ratguarding of ships at docks, the control of ratfood, and the close supervision of freight shipments from infected ports, all have a distinct value, but they are temporary measures upon which absolute reliance cannot be placed. The world requires the creation of an agency which will undertake the stimulation and assistance of those countries in which plague now exists, to the end that there may be a concerted, coordinated attempt to eradicate plague from the great crossroads of commerce.

THE TREATMENT OF CHRONIC INTESTINAL STASIS

The first attempts to overcome chronic intestinal stasis should be in the direction of hygiene, physical culture and opotherapy. In the less complex cases of this process the cause is mere disturbance of peristalsis resulting from spasm or paralysis of certain segments of the intestine, disturbances in all probability due to insufficiency of certain intestinal glands, permanent bends which are kept up by cicatricial bands due to chronic inflammation of the intestines and still more to the phenomena of organic defence which struggles against the weight and tendency to ptosis. It is certain that medical treatment is applicable to the early phase of chronic stasis and that it can be cured at this time, but the same cannot be said when the affection has gone a step farther. Consequently, the treatment should at first be medical, but before attempting treatment every patient suspected of chronic stasis should be sent to a competent radiologist, who will be able to give data as to the delay in the emptying of the contents of the stomach, duodenum and ileum, and the duration of the transit of bismuth through the large bowel. For this radiologic diagnosis a single radiogram is not enough, but a series of four or five should be taken at intervals of from twelve to twenty-four hours. Gastric ulcer and lesions of the intestine that can be caused by chronic stasis must also be looked for and finally the thorax should be inspected to ascertain if there are any evidences of tuberculosis, adenopathy or changes in the large vessels.

Medical treatment comprises abdominal and general massage, physical culture, diet, the ingestion of small doses of paraffine at the beginning of meals, thyroid and hypophysary opotherapy. Vaccinotherapy has also been advised. When these measures fail, when intestinal bends have formed that cannot be reduced, operative treatment becomes necessary. Surgical procedures for intestinal stasis vary in importance, from simple division of constricting bands to colectomy or short circuiting. Of the minor procedures are division of fibrous bands which keep the intestine bent, fixation of the intestine, folding the gut, etc. The results are often good or at least appreciable in the simpler cases.

The major procedures for this affection are short circuiting and colectomy. The latter operation is either complete or partial and can be done in one or in two stages. By colectomy in two stages is meant first a ileosigmoidostomy followed several months later by excision of the large intestine. By right hemicolectomy is meant the removal of the cecum, ascending colon and a portion of the transverse colon and by the term short circuiting is meant simple ileosigmoidostomy by inflation with sutures or intestinal buttons. Briefly, if the operative indications are thoroughly understood and if the operation selected is the proper one for the given case, the surgical treatment is both efficacious and devoid of risk. Once the operation is done the patient should be submitted to general medical treatment, diet, massage, physical culture and psychotherapy. Patience is necessary, because although cure or considerable improvement is the rule, the organs having undergone a change from chronic intoxication require time to recuperate.

ALCOHOL AND YOUNG PERSONS

While it appears to have been decided in this country that alcohol is harmful to the race, this point of view does not seem to be held by the inhabitants of Europe generally. As a matter of fact in Great Britain the expenditure annually for alcoholic beverages has risen from £160,000,000 ($800,000,000) before the war to £430,000,000 ($2,150,000,000) at the present time. While there is no intention to enter here into a discussion on the scientific aspects of drinking alcohol, it may be said at once that all who have studied the question are agreed that the abuse of alcohol injures the individual mentally, morally and physically. Drunkenness is at one and the same time sinful and foolish. It is obvious that a nation given to drinking to excess is unable to compete successfully with a nation that is even moderately sober.

Although there may be some difference of opinion with regard to the effects of moderate drinking, there is a universal consensus of opinion that children and young persons are harmed by the use of alcohol. The teachers of the young fully recognize this and in Great Britain have made up their minds that they cannot be responsible for making provision for physical and social education during evening hours of leisure and in the holidays, a duty laid upon them by the Local Education authorities unless the young people entrusted to them are definitely excluded from the atmosphere of the saloon or drinking bar. A deputation headed by Viscount Bryce, late ambassador to the United States, and representing every branch of the British teaching profession, met the Minister of Education recently and presented a petition, urging on the Government that in the promised legislation the holder of a liquor license should be forbidden to sell alcoholic liquor to any person apparently under the age of eighteen. It may be pointed out that the self governing colonies of Great Britain have already decided the matter for themselves. In New South Wales, Queensland, Victoria, South Australia, the age is eighteen; the same as in Quebec, British Columbia, and Saskatchewan prior to the Prohibition Act. In New Zealand and Tasmania, as previously in Ontario, Nova Scotia and New Brunswick, the age limit is twenty-one. It is stated that nowhere has the enactment been found to be oppressive or difficult to enfore.

It is pointed out by the British teachers in support of their plea that adolescence is the great epoch for formation of habit and the questions are asked: Is the drink habit going to keep them out of the way of temptation and is the exhilaration of alcohol the fitting and wholesome satisfaction of the cravings of accelerated growth characterized by love of excitement? The teachers declare that the excitement of alcohol is an aberrant expression of man's upward impulsion, and that the atmosphere of the drinking fraternity is incompatible with the influences of education and that intoxication affords no fitting nurture for either body, mind or spirit.

From the teachers' standpoint the young should certainly be debarred from the use of any alcoholic beverages and from the medical scientific point of view the harm done to the young by alcohol has been conclusively proved. Moderate drinking by the adult has many defenders among members of the medical profession, but no medical man would be bold enough in these days to recommend that young persons should be allowed to cultivate a taste for alcohol, but rather he would advise that they should be given no opportunity to do this. Habits are mainly formed when young and are hard to break and, after all, it must be borne in mind that while a great deal of exaggeration has been employed when declaiming against alcohol, medical scientific opinion is, on the whole, adverse to its use, except in very limited amounts. The chief argument against prohibition is that it is an interference with the liberty of the citizen, but the day has gone by when an individual can injure himself without reference to the injury he is inflicting upon his fellow men.

PHYSICIAN AUTHORS: DR. EDWARD WILLARD WATSON.

Among the men of medicine of the present day who have imbibed freely at the Pierian spring, Dr. Edward Willard Watson, of Philadelphia, stands high in rank. During a busy career as a practitioner, with obstetrics as his specialty, Watson has written four volumes of rich and dignified poetry which delights with its beautiful and careful form and the authenticity of its inspiration. Watson writes poetry purely for the joy of the effort, and thus always brings to his work a wealth of devotion and conscientious workmanship which has resulted, despite some inequalities, in his achieving many finely chased pieces of work. His volumes of verse cover a wide range of topics and show considerable diversity of style, but it is perhaps in his lyrical verses that he reaches his highest level. Some of his poems are introspective, and, now and then but not very often, he dips into the past for his inspiration, as in *Cleopatra, One and The Same, David's Lament,* and others. Occasionally his muse dwells upon some of the literary giants who have inspired and influenced him—Dickens, Poe, Swinburne, his friend, the late Dr. Weir Mitchell, and others. The sea and its glories also have great appeal for Dr. Watson, and to somewhat lesser extent this is also true of Nature in all her manifestations. His descriptive poems continually remind us of a landscape painter, or water colorist, although his scenes, as a rule, are consecrated by many precedents. This connection between his descriptive poems and the painter's art probably is due to the fact that he has the endowment of a painter as well as the soul of a poet. Since the earlier years of his practise it has been his habit to take long vacations at the seaside and among the mountains, devoting all his available time on such occasions to water color work, which he never touches after his vacation has come to an end. "It is easy to perceive that Dr. Watson is singing because his heart bids him so to do," says Herbert S. Gorman. "His subjects are all of that intimate world that his soul and heart touch—nature, friends, love and life. His sonnets are marked by a clarity of thought and ableness of structure that is not always found in sonnets, the hardest verse form to achieve successfully."

For many years Watson hid his poetical light under a bushel. He showed his work only to a few friends, who finally induced him to publish his verses, with the result that his first volume, *Today and Yesterday,* appeared in 1898. This was followed two years later by *Songs of Flying Hours,* and in 1905 *Old Lamps and New* appeared. His latest volume, *If Love Were King,* did not make its appearance until 1915. The late Edmund Clarence Stedman was an admirer of Dr. Watson's poetry, particularly the sonnets, and included Watson's beautiful poem, *Absolution,* in his *Anthology of American Poetry.*

Dr. Watson is one of the distinguished coterie of physicians who have helped Philadelphia to maintain her prestige as a great medical centre. He was born in Newport, R. I. (the eldest of a family of six children), on January 2, 1843, a son of the Rev. Benjamin Watson, D. D., and Lucy (Willard) Watson. The Watsons are an old Quaker family of Pennsylvania, dating back to the time of William Penn. Through the maternal line Dr. Watson is connected with many distinguished men, including two presidents of Harvard and the builder of the famous Harvard clock. Dr. Watson's education was acquired in the public schools of Newport, at Rochester, N. Y., where the family resided for five years, and at the rectory school at Hamden, Conn., then a well known Episcopalian school. Later he became a student in the collegiate department of the University of Pennsylvania, but at the close of his junior year was transferred to the medical department, from which he was graduated in 1865. After two years as an intern at the Episcopal Hospital of Philadelphia he made a tour of England, then returned to Philadelphia to begin general practise, and has remained there ever since. He was connected with the Northern Dispensary, at Philadelphia, for several years, and for thirty-five years was physician to the Philadelphia Institute for the Blind, now located at Overbrook, Pa. He also served several years as physician to the Magdalen reformatory and the Chestnut Hill Hospital for Consumptives.

Dr. Watson's literary work has not been confined exclusively to poetry. He has contributed extensively to the press of Philadelphia, the *Philadelphia Medical Times,* the *Therapeutic Gazette, Medical Pickwick,* and other professional journals, generally in the rôle of a reviewer. For seven years he conducted a department in *Medical Notes and Queries,* now dead. He was associated with Dr. Roland G. Curtin in the preparation of the earliest extensive series of papers on influenza published in this country.

He is a member of the College of Physicians, the American Medical Association, his county and state medical societies, is one of the charter members of the Obstetrical Society, and for many years was a member of the Clinicological Society of America. He also is widely known in Philadelphia club circles, and belongs to the Franklin Inn Club, the Medical Club, the Pen Club, and the Pennsylvania Historical Society. He has been especially active in the Franklin Inn Club, which was founded by the late Dr. S. Weir Mitchell, who always took a great interest in Dr. Watson's literary and professional work. The two worked together on many occasions, both in their professional and extraprofessional work. Dr. Watson says Dr. Mitchell was his main reliance as a consultant. In a poem published in the *Public Ledger* of Philadelphia at the time of the death of Dr. Mitchell, Watson pays a splendid tribute to his late friend and colleague. He has not shirked his responsibilities of public spirited citizenship. Throughout his years of heavy practice he has kept himself alive to all the vital questions and issues of the day, and has been particularly active in municipal affairs, lending his support to the obliteration of political dishonor and for the promotion of municipal reform and progress. He has been a member of the ward committee of the Municipal League for many years.

Although he is now far past the threescore and ten goal, he is as active in his profession as ever. He has a deep love for his profession, both from a scientific and a humanitarian standpoint. He attributes his sturdiness at the age of seventy-eight to a good constitution which he inherited, to the observance of strict hygienic rules, and to taking, after his first few years of practice, long vacations. Dr. Watson was married in 1870 to Miss Georgiana French, of Hartford, Conn., who died about 1897. Two children, a son and daughter, of that marriage survive. He was married again in 1900 to Delia Alden, a daughter of the late Timothy Shay Arthur, the author of that bizarre classic of prohibition, *Ten Nights in a Barroom.*

THE MENACE FROM HEAT SUPPRESSION

The most significant fact in all the range of human physiology is the maintenance of the temperature of the body at practically one point notwithstanding that the temperature of the surrounding atmosphere may vary a hundred and fifty degrees. The fact is as often overlooked as it is significant. Moreover, we fail even more to consider the great fund of energy expended and the wear and tear on special functions which must take place in order that this maintenance of constant temperature can occur. Since body heat is important we conserve it through artificial means by clothing, shelter and fire; but if heat loss sufficiently rapid to cause an actual fall in internal temperature, or temporary derangement of the circulatory mechanism, is of vital importance, any interference with an adequate heat loss, so that the internal temperature begins to rise abnormally, is just as important and occurs with vastly greater frequency.

Where the external conditions are such as to interfere with the normal and ready elimination of heat, the body begins at once to protect itself from self cremation by reducing muscular tone and the demand for food, and there is a tendency to approach the condition of the dweller in the tropics. Now every one knows that the resident in the tropics is not so fit as he of the temperate zone either for work or for resistance to infection, especially infection succeeding chill. The effect on work output by conditions of temperature and humidity which are usually considered insignificant are really very great. And not only is the working power reduced, for Vernon discovered that in the tin plate industry there was an increase in the number of accidents when the temperature rose above 70° F.

The body is too much concerned with self preservation from internal exhaustion either to do a full day's work or to look out for external sources of danger. In industries in which high degrees of heat and humidity have been allowed to prevail it has long been known that the tuberculosis rate is high. It may be that there is a special predisposition to the disease in those who enter these occupations, and sometimes the presence of dust is a factor; yet when we consider that cool fresh air is especially beneficial in affecting a cure of tuberculosis, why should not the opposite state of the atmosphere lead to the development of the disease? Industrial students may yet prove this bit of theorizing to be true.

We have not yet come to appreciate that the elimination of heat is just as important as the elimination of carbon dioxide or of urea. If the lessening of heat expulsion depresses the physiological functioning of the normal human machine and throws it from a normal into a pathological and self-protecting state, the sick must be even more sensitive to such conditions. And yet the sick room, whether in home or hospital, too frequently still has an atmosphere which, instead of helping to brace and restore the patient, tends to hold him in tropical relaxation and indifference to a return to a vigorous existence.

News Items.

Association of American Peroral Endoscopists.—There will be a meeting of this association at Atlantic City, June 1st.

Hopkins Post Is Offered to Dr. Rufus I. Cole.—Dr. Rufus I. Cole, director of the Rockefeller Institute Hospital in New York, has been invited to fill the position of professor of medicine in the Johns Hopkins Medical School, to succeed Dr. William S. Thayer.

Phi Alpha Sigma.—Phi Alpha Sigma Medical Fraternity is planning to hold a "get together" luncheon during the Boston meeting of the A. M. A. Members are requested to register their local addresses. E. J. G. Beardsley, secretary, will be at the Hotel Brewster, Boston.

Cancer Plague on Increase.—Cancer kills more than 42,000 persons every year in England and Wales. The last complete annual statistics are for 1919, but for the first half of 1920 the casualties were 21,356, 786 more than in the corresponding period for the previous year.

Base Hospital 89.—All officers and members of Base Hospital 89 are invited to Mess together during the Boston meeting of the A. M. A. Association. Members are invited to register in the book provided at the Fraternity table. Walter S. Lucas, secretary, will be at the Hotel Brewster during the session.

Jefferson Alumni Meeting.—The Alumni Association of the Jefferson Medical College of Philadelphia is to hold a Smoker Reunion during the session of the A. M. A.'s meeting in Boston. All graduates of the College are invited to register their local addresses in the book at the Jefferson Table in the Convention Hall. Dr. Wallace P. MacCallum, of 214 Huntington Avenue, Boston, will act as secretary before the convention.

Meeting of Women's State Medical Society.—The fifteenth annual meeting of the Women's Medical Society of New York State was held in Brooklyn on May 2nd, when new officers were elected, Dr. Esther Parker, of Ithaca, N. Y., being chosen president. Papers were read by Doctors Isabel Meader, Jane Baldwin, Mary Gage Day, Mary T. Greene, M. Louise Hurrell, Alice Bennett, Esther P. Lovejoy, and Josephine H. Kenyon, and were followed by a discussion led by Dr. Florence Sherman. Dr. Lois L. Gannett, the outgoing president, gave a short address, as did Dr. Eliza Mosher.

New York Surgical Society.—At a recent meeting of the New York Surgical Society, Dr. John A. Hartwell was elected president, Dr. Eugene Pool, vice-president, and Dr. Seward Erdman, secretary and treasurer.

One Thousand New Cases of Insanity Among Veterans Monthly.—Members of the House of Representatives were startled when informed that, at the end of the war, 74,500 men suffering from nervous diseases, epilepsy and insanity were discharged from the Army and Navy. These are increasing at the enormous rate of 1,000 each month, and the peak will not be reached for several years to come. About 50,000 of these cases are expected to require treatment, and modern spacious hospitals must be provided.

Association of Military Surgeons.—The twenty-ninth annual meeting of the Association of Military Surgeons of the United States will take place June 2nd-4th, in Boston, Mass., with headquarters at the Copley-Plaza Hotel, and the meetings in the Swiss Room there. A cordial invitation is extended to members of the medical profession, irrespective of whether they are members of the association or not, to attend the meeting, and as the date immediately precedes that of the convention of the American Medical Association, it gives an opportunity to be present at both during one trip.

New York State Medical Health Show in Brooklyn.—The New York State Medical Association will hold a Health Show as one feature of its annual meeting, May 1-7, 1921. The Twenty-first Regiment Armory will house the show. Aside from the technical exhibits of interest mainly to the doctors, nurses and others in public health activities, there will be many features which the general public will find of great value. The undertaking involves an expense of more than $25,000, and is said to be the most ambitious project of its kind ever undertaken by a state medical organization.

Irish Honor Our Surgeons.—The Council of the Royal College of Surgeons of Ireland on April 26th resolved to confer honorary fellowships upon the following American surgeons: Dr. William James Mayo, and Dr. Charles Horace Mayo, of Rochester, Minn.; Dr. George Brewer, of New York; Dr. George W. Crile, of Cleveland; Dr. Richard H. Harte, and Dr. William Williams Keen, of Philadelphia; Dr. John M. T. Finney, of Baltimore, and Dr. Albert J. Ochsner, of Chicago. The ceremony of conferring the honors will probably occur in the autumn.

United States Civil Service Examinations.—Open competitive examinations for vacancies in Public Health Service throughout the United States for position of röntgenologist at $200 to $250 a month, associate röntgenologist at $130 to $180 a month, assistant röntgenologist at $90 to $130 a month, junior röntgenologist at $70 to $90 a month. Applicants should at once apply for form 1312, stating the title of examination desired, to the Civil Service Commission, Washington, D. C. Applications for these examinations will be received by the Commissioner at Washington, D. C., until August 1, 1921.

New Medical Institute.—The Physiatric Institute for Diabetes and Metabolic Disorders was opened on April 26th on the former estate of Otto H. Kahn at Morristown, N. J. Several hundred physicians and surgeons were at the exercises Speeches were made by Dr. Henry S. Pritchett, president of the Carnegie Foundation, and Dr. Frederick M. Allen, director of the new institution. The site of the institute comprises about 200 acres of lawns, woodland, gardens and farm lands.

National Anesthesia Research Society.—At a special meeting of the National Anesthesia Research Society, held at Columbus, April 22nd, vacancies were filled, minor amendments to the constitution were authorized, and an important constructive program for the future was planned. The following officers were elected: President, Dr. E. I. McKesson, of Toledo, to fill the unexpired term of Mr. Stephen Morris, of Philadelphia; Board of Governors, Dr. R. L. Clemments, of Philadelphia; second vice-president, Dr. W. I. Jones, of Columbus; Research Committee, Dr. William D. B. McNeider, of the University of North Carolina; Dr. B. H. Schlomovitz, of Milwaukee, and Dr. William Webster, of the University of Winnipeg.

Western Electrotherapeutic Association.—The third annual meeting of this association was held at the Little Theatre, Kansas City, Mo., April 21-22, 1921, under the presidency of Dr. B. B. Grover, of Colorado Springs. The following officers were elected for the ensuing year: President, Curran Pope, M. D., Louisville, Ky.; first vice-president, L. A. Marty, M. D., Kansas City, Mo.; second vice-president, G. M. Liston, M. D., Baldwin, Kan.; secretary, Charles Wood Fassett, M. D., Kansas City, Mo.; treasurer, W. P. Grimes, M. D., Kansas City, Mo.; registrar, W. F. Roney, M. D., Marysville, Kan.; board of trustees: O. J. Cunningham, M. D., Kansas City, Mo., and B. B. Grover, M. D., Colorado Springs. The next meeting will be held in Kansas City, April, 1922.

Second International Congress on History of Medicine.—The Second International Congress on History of Medicine will be held in Paris, July 1-5, 1921. It will be followed almost immediately by a Congress on Urology in Paris, and then a Congress on Neurology in Luxembourg. The Congress on the History of Medicine is held under the auspices of the Société Francaise d'Histoire de la Médecine, and presided over by the Professors Jeanseleme and Menetrier. The Congress will be opened by the inauguration of the new Museum of Medical History. The morning program will be devoted to such topics as the history of hospitals and public health work, identification of the great epidemics of history, the rôle of pharmacists in the development of biology, the food supply of man and beast in antiquity and the middle ages, etc. In the afternoons, excursions will be made to various hospitals, museums and other places of historical interest about Paris. American doctors are requested to contribute communications, and will be welcomed as members of the Congress. Further details may be secured in this country from Dr. E. B. Krumbhaar, Philadelphia General Hospital, Philadelphia; or from Dr. Laignel-Lavastine, the Secretary General, 12 bis, place de Laborde, 8 arrond, Paris.

Died.

Allen.—In Nashua, N. H., on Monday, May 2nd, Dr. Bradford Allen, aged sixty-four years.

Baxter.—In Nelson, Pa., on Friday, April 15th, Dr. Calvin S. Baxter, aged sixty years.

Bierwirth.—In Long Beach, L. I., on Monday, May 2nd, Dr. Julius C. Bierwirth, of Brooklyn, aged sixty-four years.

Bornman.—In Philadelphia, on Tuesday, May 3rd, Dr. John M. Bornman, aged forty-eight years.

Bowen.—In South Scituate, R. I., on Thursday, April 14th, Dr. William H. Bowen, aged eighty-one years.

Brown.—In Saranac Lake, N. Y., on Saturday, April 30th, Dr. Robert M. Brown, aged forty-three years.

Connor.—In Chippewa Falls, Wis., on Saturday, April 23rd, Dr. Henry T. Connor, aged fifty-eight years.

Covert.—In Seneca Falls, N. Y., on Friday, April 15th, Dr. Rynear Beach Covert, aged seventy-seven years.

Everhart.—In Hanover, Pa., on Thursday, April 28th, Dr. Oliver T. Everhart, aged ninety years.

Foutche.—In Berkeley Springs, W. Va., on Tuesday, April 12th, Dr. Charles Russell Foutche, aged fifty-nine years.

Gilbert.—In Louisville, Ky., on Thursday, April 14th, Dr. George B. Gilbert, aged forty-five years.

Goodale.—In New York, on Friday, April 29th, Dr. Addison W. Goodale of Watertown, N. Y., aged eighty-nine years.

Halberstadt.—In Pottsville, Pa., on Saturday, April 23rd, Dr. George Howell Halberstadt, aged sixty-five years.

Hartman.—In North Braddock, Pa., on Saturday, April 23rd, Dr. John C. Hartman, aged forty-eight years.

Hendricks.—In Iola, Kansas, on Friday, April 29th, Dr. William S. Hendricks, aged ninety-three years.

Irwin.—In Atlantic City, N. J., on Monday, May 2nd, Dr. J. Willoughby Irwin, of Philadelphia, aged forty-nine years.

Kepke.—In Brooklyn, N. Y., on Sunday, May 1st, Dr. John Kepke, aged sixty years.

Kirkland.—In Bellows Falls, Vt., on Tuesday, May 3rd, Dr. Edward Kirkland, aged sixty years.

Kurtz.—In Reading, Pa., on Thursday, April 21st, Dr. Samuel L. Kurtz, aged ninety-eight years.

Landers.—In Washington, D. C., on Sunday, April 24th, Dr. William E. Landers, aged thirty-seven years.

Lewitt.—In San Francisco, Cal., on Monday, April 25th, Dr. William B. Lewitt, aged sixty-three years.

Londoner.—In Brooklyn, N. Y., on Wednesday, April 27th, Dr. Jacob Londoner, aged fifty-eight years.

McClintock.—In New Moorefield, Ohio, on Wednesday, April 27th, Dr. Albert McClintock, aged sixty-seven years.

Montelius.—In Mt. Carmel, Pa., on Tuesday, April 26th, Dr. Ralph W. Montelius, aged sixty-seven years.

Olcott.—In Tuscan, Arizona, on Tuesday, April 19th, Dr. Arthur W. Olcott, aged fifty-five years.

Peltz.—In Roxborough, Pa., on Friday, April 29th, Dr. Benjamin R. Peltz, aged seventy-eight years.

Porterfield.—In Jamesport, Mo., on Monday, April 25th, Dr. Daniel Lewis Porterfield, aged forty-one years.

Root.—In New York, on Sunday, April 24th, Dr. Arthur Lewis Root, aged sixty-two years.

Sally.—In Augusta, Ga., on Thursday, April 14th, Dr. A. E. Sally, aged sixty-three years.

Seufert.—In Chicago, Ill., on Monday, April 25th, Dr. Edward C. Seufert, aged fifty-seven years.

Schafmeister.—In Ossining, N. Y., on Monday, May 2nd, Dr. John A. Schafmeister, aged sixty-three years.

Sheehan.—In Syracuse, N. Y., on Thursday, April 28th, Dr. James V. Sheehan, aged thirty-six years.

Smith.—In Jefferson, Wis., on Friday, April 15th, Dr. George Lewis Smith, aged seventy years.

Suits.—In Tribes Hill, N. Y., on Thursday, April 21st, Dr. Peter Langrave Suits, aged seventy-six years.

Walker.—In Long Beach, Cal., on Monday, April 25th, Dr. Frederick E. Walker, aged forty-nine years.

Williams.—In New York, on Friday, April 29th, Dr. Cordelia Williams, aged eighty-nine years.

Wisewell.—In Phelps, N. Y., on Sunday, April 24th, Dr. Francis H. Wisewell, aged seventy-seven years.

Wolford.—In Harrisburg, Pa., on Thursday, April 28th, Dr. Martin L. Wolford, aged sixty-eight years.

Wright.—In St. Louis, Mo., on Monday, April 18th, Dr. Francis D. Wright.

LETTER FROM GENEVA.

(From our own correspondent.)

Geneva, *March 10, 1921.*

The up to date means of fighting have imposed upon armies and navies the almost unlimited use of aeroplanes and this involves the rapid recruiting of a large number of pilots. Now, it was soon perceived in the recent war that the majority of the accidents occurring in midair were due to a temporary physical exhaustion of the aviator, who, for a few instants, lost control of those movements necessary for the stability of his machine. This exhaustion arises from several causes. Sometimes it is the result of exhaustion occurring in a subject in general too weak physically to support an effort of long duration; at other times it is the consequence of an inhibition of one of the principal functions of the economy an organ of which is the seat of some pathological taint. Finally, it may be a disturbance of a central coordinating organ, the neuraxis.

Therefore, it necessarily follows that only robust subjects, free from all pathological taints, should be accepted for the personnel of the aviation corps, thus assuring the maximum of safety for themselves, as well as for their passengers. It was with this conception as a basis that the International Congress at Rome emitted the following propositions for use in the future:

1. In order to obtain a certificate, either as pilot or navigating officer, or as a mechanic of an airplane employed for public transportation, every candidate should present himself for an examination before physicians specially designated or authorized by the country to which he belongs.

2. The medical examination, as much for the initial selection as for a periodical revision of the air navigating personnel, should examine the following conditions relating to the candidates' physical and mental aptitudes:

a. The personal and hereditary antecedents, and in particular the equilibrium of the nervous system; the absence of any mental disturbance or any other moral or physical defect which might involve the security of aerial navigation.

b. The pilots and navigating officers engaged in public transportation should not be less than nineteen years of age.

c. General medical examination. The aviator or aeronaut must not suffer from any disease or affection capable of rendering him suddenly unfit for conducting this machine. He should have a heart, lungs, kidneys and nervous system in a condition fit to support the effects of altitude and prolonged flight.

d. General surgical examination. The aviator or aeronaut should not be suffering from any wound, must not have undergone any operation, must not present any congenital or acquired affection which could be an obstacle to security in maneuvring an aeroplane.

e. Examination of the eyes. The aviator or aeronaut must possess a degree of visual acuity compatible with the necessities of his functions. No pilot or navigating officer should have more than two diopters of latent hypermetropia and the muscular coordination should be adapted to the refraction. The visual field of each eye and color perception should be normal.

f. Examination of the ears. The middle ear must be normal. The aviator or aeronaut should possess a degree of auditive acuity compatible with the necessities of his functions.

g. The vestibulary apparatus should be intact and neither hyperexcitable nor hypoexcitable.

h. Examination of the nose and throat. The aviator or aeronaut should have a normal nasal permeability and must not be afflicted by any serious acute or chronic affection of the upper air passages.

3. Each contracting government should provisionally fix its own methods (of examination) until the details and minimum conditions of the tests employed have been ultimately settled, at a special conference, by authorized medical representatives of the International Commission of Aerial Navigation.

4. The candidate having fulfilled the conditions above announced, will receive a medical certificate which must be produced in order to obtain his permit.

5. In order to control his physical aptitudes for aerial navigation, each aviator or aeronaut will be examined at stated periods, at least every six months, and the conclusions of these examinations will be added to his papers. Also, in case of disease or accident, his aptitude for aerial navigation should be again investigated. The dates and results of these complementary examinations shall be mentioned on the certificate of the pilot or navigating officer.

6. An aviator or aeronaut who, previously to the present convention, shall have given proof of aptitude for aerial navigation, cannot, so long as he shall have maintained his aptitude, be removed from the personnel of aerial navigation on account of the mere fact that he does not fulfill the above mentioned conditions.

7. Each contracting government can, should it judge necessary, increase the severity of the above mentioned conditions; but, in any case, the minimum conditions required must be maintained for international traffic.

I shall now consider the medical examination as it must be carried out in order to fulfill the exigencies of the above stipulations, and, first of all, shall refer to the identification, morphology and general examination of the candidate.

It is important to note the exact name and Christian name or names, and then to complete the identification by photographs and fingerprints. It is quite important to note all the little signs or marks which are readily observed, such as the arrangement of the teeth, the presence of nævi or cicatrices on the face or neck. These indications are useful in case of accident. The exact age of the candidate is important. Guillain is of the opinion that a candidate should be less than thirty years of age, but Colonel Renard thinks that any pilot admitted before this age may continue his service after he is older.

The height should not, in principal, exceed one metre eighty-three centimetres, and the weight not more than eighty kilograms. But these figures do not represent an absolute limit, and it is of greater interest to obtain a precise indication drawn from Bouchard's anthropometric segment and Piquet's coefficient of robustness. These, resulting from the relations between the weight and height, will allow one to approximately appreciate the value of the subject's constitution. In the same way, the canons of proportion of the human body will allow the examiner to appreciate the relationship of the volumes and lengths of the various segments of a well built individual and to compare them with those of the candidate. The head is the unit of measure, and the canon of the average European man, as worked out by Paul Richer, should be employed in subjects having a height less than one metre sixty-five centimetres. Above one metre seventy-eight centimetres, a canon of eight heads must be used. The head is divided into two equal parts by a horizontal line passing by the internal angle of the eyes; the height of the subject is equal to his greatest proportion. The limbs should measure three and a half heads from the ground to the gluteal fold, or from the acromion to the tip of the extended medius finger. It must be verified that the man under examination comes near to these indications, and, for the purpose of showing the importance of this subject, let it be recalled that diseases such as rickets or achondroplasia have, among their most prominent symptoms, an abnormal relationship between the different parts of the body.

In order to carry out these various examinations, the subject must be completely bare, and the examiner will take this opportunity to detect traces of wounds or former accidents. The cicatrices will not have any bearing on the verdict of the examiner unless they interfere with the functions of the parts or if a hernia has developed at their site. The free play of the joints must be looked into because an ankylosis may interfere considerably in working the levers of the machine. The skin and any phanerogenic process must be examined, as the latter may be an indication of some latent morbid process, the sudden development of which might have the most serious consequences.

Finally, attention must be paid to the bones to ascertain if any deviation or a large painful callus exist which might interfere with the proper action of the limb, while certain affections of the muscles—myopathy, Thomsen's disease—must be looked for, as they are incompatible with rapidity of movements. It is hardly necessary to add the antecedents and general aspect of the candidate should be normal, and, although subjects with pathological taint should be excluded, candidates need not be athletes to be accepted, as any well developed and healthy man may become an excellent aviator. The heart should be absolutely free from any lesion, either of the valves, pericardium or myocardium. This point offers no exception, because a lesion which in ordinary cricumstances appears to be compensated may no longer be so during flight. Changes in cardiac rhythm or a neuropathic appearance should also be causes for eliminating the candidate.

The methods employed for examination of the heart and vessels do not differ from those in daily use. Arterial pressure, which has so great importance in aviation, should be tested with Pachori's apparatus and controlled by the auscultation method, as maintained by Vacquez and Laubry. Tests of aptitude for effort may be added to the examination of the circulatory system. The physiology of respiration is of importance, and this the English have particularly studied. In France the thoracic ampliometria is measured in inspiration and expiration with differential measurements, the vital capacity given by the spirometer and the inspiratory and expiratory pressure noted with Pichon's penumometer by the rise of a column of mercury which normally should reach nine or ten centimetres Hg. The cessation of breathing with and without effort and the manner of the respiration under forty millimetres Hg. pressure should be noted. All these tests, combined with an ordinary clinical examination, will give a good idea of the candidate's respiratory functions. Any affection of the pulmonary parenchyma or the pleura, or any sequelæ of wounds of the chest, are absolute contraindications to accepting the candidate.

There should be no disturbance of the digestive apparatus. It is particularly important to look for enteritic manifestations on account of the neuropathic disturbances which go with them.

The urine must be carefully tested; it should contain no sugar or albumin, but, should traces of the latter be found in an otherwise healthy individual, the renal permeability must be examined, as this is our only means of testing the proper working of the kidneys.

The most important examination of all is that of the nervous system. First of all, it is necessary to be sure that the subject is free from syphilis, and for this the personal and family antecedents must be carefully gone over. Note the reactions of the pupils to light, and do a Bordet-Wassermann test if necessary. Any subject with a cranial trauma, no matter how slight, or who shows manifestations suggesting epilepsy, should be eliminated at once.

When these points have been settled, a systematic examination of the nervous system is then undertaken; the segmentary muscular force, reflexes and sensibility are all gone over. Finally, one must successively examine the functions of the cranial and peripheral nerves. But the principal examinations are those of walking, equilibrium and coordination of movement by the different tests of the cerebellar system; of cortical vision by means of the campimeter, in order to eliminate hemianopsia, hemiachromatopsia, and narrowed visual field. Then come the cerebelloauditory functions, otherwise those of the labyrinth. These, grossly tested by Barany's two tests and that of volaic vertigo, will be more minutely examined by Broca's pendulum chair. The sensation of deviation is normally perceived very quickly, but what is important is the regularity of the duration of this during repeated tests and not the integral time of the reaction. The candidate is to be rejected if there is inequality between the times.

The same applies to visual and auditory rapidity which, if constant during several examinations, is the best proof of the psychosensorial integrity of the subject. Finally, if the clinical symptoms of neurological affections are not distinct, it may be useful to resort to lumbar puncture and examine the cerebrospinal fluid.

Book Reviews

TUBERCULOSIS COLONIES.

Industrial Colonies and Village Settlements for the Consumptive. By Sir GERMAN WOODHEAD. K.B.E., V.D., M.A., M. D., LL. D., Professor of Pathology in the University of Cambridge; Fellow of Trinity Hall; Assistant Commissioner, Royal Commission on Tuberculosis (1895-96); Member of the Royal Commission on Tuberculosis (1901-12), and P. C. VARRIER-JONES, M. A., M. R. C. S., L. R. C. P. (Lond.), Foundation Scholar, St. John's College, Cambridge; Honorary Medical Officer, Cambridge Tuberculosis Colony; Tuberculosis Officer for the County of Cambridge; Member of the Minister of Health's Advisory Committee on Village Settlements. With Preface by Sir CLIFFORD ALLBUTT, K. C. B., M. A., M. D., LL. D., D. Sc., F. R. C. P., F. R. S., Regina Professor of Physic in the University of Cambridge. Cambridge: At the University Press, 1920.

As the authors say in the preamble to this work, it is not a detailed and ordered account of the development of the village settlements and industrial colony at Papworth, but a revision of various articles written and papers read on the subject in the course of the past few years by Sir German Woodhead and Dr. P. C. Varrier-Jones. This mode of publication possesses its advantages, and it certainly conveys to the reader a clear idea of what has been done and is being done for the behoof of the consumptive, mentally and physically, by the system in vogue in Cambridgeshire.

Before, however, entering into a review of the book itself, reference must be made to the preface contributed by Sir Clifford Allbutt. This is written with the literary charm combined with deep and sympathetic knowledge which distinguish all the writings of that grand old man of medicine. He points out that, in the case of tuberculosis, hope is the great reviver, and that to be successful all methods of treatment must be based upon a recognition of this fact. Hope plays a leading rôle in the treatment of all diseases. The mind has an immense influence on the human system, and the cheerful sufferer has a better chance of recovery by far than he who looks upon the dark side of things. The village settlement and industrial colonies at Papworth were founded with this point of view always in mind.

One reason why the sanatorium method of treatment failed, or rather was only partially successful, was because the patient was turned out into the world, or more frequently left the institution voluntarily, before he was in a fit state of health to compete with his fellow workers. As a rule, indeed, the individual who has once been ill enough with pulmonary tuberculosis to undergo sanatorium treatment is never able to compete on equal terms with he who has a "sound mind in a sound body." Also it must be borne in mind that men and women are averse from working side by side with those who have been treated for tuberculosis. Moreover, while the sanatorium treatment, with its fresh air, good food, rest, and absence from worry, was a step in the right direction, it was not the end of the journey, as many of its too enthusiastic advocates proclaimed.

The sanatorium treatment in itself, then, may be termed a failure, and as a result of the inquiries and observations of the authors of this work it became evident that it was not so because the patients were not properly classified and judiciously selected for this form of treatment, but was owing to the fact that such classification and selection, although theoretically correct, was impossible to carry out. It is allowed that "early cases," "middle cases" and "advanced cases" should not be treated under the same roof, but separate treatment for these is, as said before, an impossibility. The authors then came to the conclusion that, for the work to be carried on properly and successfully, all three types of patients must be accepted for treatment, and that, as the cases seldom or never remained of the same type and degree for any prolonged period, all must be housed and cared for, not under the same roof, certainly, but in the same colony or settlement. Hence arose the system described in this book.

It is very interesting to read of the fallacies regarding the treatment of the consumptive which have been disseminated for years and believed in by the majority, and which have been shown to be wrong. For example, for years it has been almost an "article of faith" that agricultural or gardening pursuits were peculiarly well adapted for the consumptive. The fresh air was said to so invigorate the system weakened by infection that it threw off the germs and became more or less immune to further attacks. Undoubtedly, plenty of fresh air is indicated in treatment, but an important point was overlooked, namely, that the agricultural laborer is not, like the poet, "born, not made," but has to undergo a prolonged period of training extending over many seasons before he can be termed a decent laborer and able to earn enough money to keep his body and soul together. If he has a wife and family his case is infinitely worse. A similar train of argument applies to gardening on an extensive scale. As a matter of fact, the consumptive is not fitted for "out of door" jobs of any kind except of a light nature, and at this description of work in competition he is unable to keep himself, at any rate, in the manner that a delicate person requires to be nourished and housed.

Again, at other industrial pursuits, and especially as a craftsman or skilled artisan, the consumptive is terribly handicapped. He cannot be trained intensively; his training must be of an extended character. This difficulty, however, can be largely overcome at a colony where repetition work only is involved, and it soon became manifest that with machinery at the disposal of the colony and a few skilled workers who could train men in some one or two processes, and then allot work and assemble parts, a number of men might be enabled to earn wages that would constitute a considerable addition to the income side of their weekly budget.

Dr. Varrier-Jones and his colleagues are insistent upon the need for suitable housing for the patients, and rightly so. Furthermore, while they are aware that rest is essential in accordance with the condition of the patient, they are convinced that they should be well housed, but in the open; that is, in shelters. Among other reasons for their faith in the beneficial effects of fresh air upon the consumptive they cite these: 1. The patients do so well when housed in shelters, and, 2, they are slowly but surely educated by their surroundings. They are greatly in favor of the simplest shelters and of the roughest workshops, or, in any event, of workshops that may be imitated in the simplest fashion, and this quite apart from the fact that it is impossible to erect expensive and elaborate accommodation for the same number of patients that may be readily provided if built along simple lines. These are built by the patients.

As for the treatment of the advanced cases, it is obvious that in any colony provision should always be made for a certain number of hospital beds. Emphasis is laid on the fact that there should be no useless work in a colony. It is pointed out that it is just as easy to grade useful as useless work. "Many of the socalled farm colonies now in existence can be said to be nothing more than sanatoriums writ large, and until we grasp the idea that useful work and training should always be combined with ordinary sanatorium treatment we shall never get the full value out of our colonies."

A feature of the system followed in the conduct of the Papworth scheme is that the patients themselves have been exploited, not as regards work, for they receive every penny that is earned in the industries, but in their ideas and suggestions as to the best methods of developing and building up the industrial colony. "Each man has been asked to contribute his mite of information and experience; moreover, the colony has been built up and run by the labor of the consumptive, and those who are in the place for any length of time come to think, and rightly, that they have had a hand in the completion of the colony in which they live and work."

The psychological influence upon the patient is dwelt on, and to state, as Sir Clifford Allbutt stated, that hope is a marvelous restorative in the treatment of consumptives, would be to overelaborate a point that really needs no elaboration. This psychological influence is very evident at Papworth; the element of hope enters into all the undertakings there. "With the hospital at one end of the scale, the village settlement at the other, and the intermediate rest and temperature houses, open air shelters, hostels and workshops, each and all ready for his reception, the patient gradually gains confidence; he may be in the lowest grade, but he always keeps his eye, his hopes and his aspirations fixed on the highest as being attainable, not only for himself but for those dependent upon him. He is no longer a valetudinarian but a useful and productive member of society, a man who, though a consumptive, has learned to be a consumptive, to lead the life of a consumptive and even to enjoy that life." The entire book is fascinating, dealing with a system of treating tuberculosis which, while still on its trial, has yet been carried far enough to fully demonstrate its value and its immense possibilities. The village settlement would appear to be the practical embodiment of a great idea. The consumptive, during the time that he is being treated, is enabled at one and the same time to pay his way and to live under healthy conditions with his family, and is no menace whatever to the community at large. The combination of treatment is ideal theoretically, and, although its practical consummation is and will be attended with many difficulties, there seems every reason to hope that, in the long run, it will prove to have justified its inception. It may be said that, in Dr. Varrier-Jones, the man has been found who has sufficient imagination to plan and enough common sense to carry out his views.

Industrial Colonies and Village Settlement will doubtless be read with interest by those Americans, medical and otherwise, who concern themselves with the problem of tuberculosis. There are industrial colonies in this country, and those engaged in their management may learn a good deal from the experiences of pioneers such as Sir German Woodhead and Dr. Varrier-Jones are.

NEAR EAST SURGERY.

A Consulting Surgeon in the Near East. By A. H. TUBBY, C. B., C. M. G., M. S. (Lond.), F. R. C. S. (Eng.), a Consulting Surgeon to the Mediterranean and Egyptian Expeditionary Forces, 1915-1919; Lieutenant Colonel, R. A. M. C. (T.), and Formerly Temporary Colonel, A. M. S.; Consulting Surgeon to the Westmister, Royal National Orthopedic, Evelina, and Christ's Hospitals, etc. London: Christophers, 1920. Pp. xiii-279.

The military surgeon has a curious position, in that he has to pass the best of men to be drilled and disciplined as a defense to their country with the knowledge that such fine mechanism will be ruthlessly broken and jarred, the best to be mended for another battle. He sees the men dauntless, excited, fearful, go out. They return, the most valiant an inert mass, the strongest broken limbed and bloodily wounded. Now begins the battle with fever, putrefaction, gas poison, delirium, amputations, want of surgeons, of supplies, of time, of strength. Gentlest touch gives hard borne pain, and involuntary oath and groan and troubled jest are heard. Yet all must be tended, and, if thousands are saved, thousands may be swept off by epidemics, as in Palestine in December, 1918, when 8,000 of our men yielded to influenza, pneumonia and malignant malaria.

So the doctor's eyes see far ahead on a train of scarred and maimed men walking wearily through life when war is over and its excitement collectively has given place to individual loneliness. Much of all this fell to the lot of Dr. Tubby, Lieutenant Colonel R. A. M. C., during his nearly four years as consulting surgeon in the Near East. The responsibility is great for these officers. They determine if the surgeons have adequate means. They supervise the operations and approve the operators. In a word, the quality of the work rests with the consultants. Tubby and Horsley had an arduous task in Alexandria in 1915, they being the only two consultants there, especially hard when a sand laden south wind rose and the temperature in the bell tents was 109° F. Once a convoy of six hundred wounded arrived from Gallipoli, when there were only three nurses available. During those months the wards were infested with flies which spread infection from typhoid and dysentery cases. He tells of transports for the sick which seemed to lack everything necessary, and introduces us to Quick Dick and Asiatic Annie, "a ponderous brute hurling 10-12 inch shells with heavy effort"; worse were the "aerial torpedoes," filthy green flies the size of blue bottles, said to feed on corpses. One pint of fresh water each was allowed. Officers and men suffered tortures from lice. One captain said, "Here am I, Lord ———, with £150,000 a year and lousy," while a colonel naïvely remarked that he had got rid of his last louse that morning. One morning over seven hundred shells were fired into the camp in three hours. A night in June saw a store of five million cartridges exploded by spies. As nothing was known of the severe blizzards in the autumn, no preparations were made against frost bite, a serious mistake.

The crisis of the Dardanelles campaign at Suvla is given graphically; the final defeat of our men, the overladen hospital transports, the insufficiency of fresh water, the absolutely necessary operations. Twenty-nine thousand wounded were cleared through Imbros in eight days! There were four hundred dangerously wounded on the ship Tubby was on, and he says there was never a grumble from one. He tells some stories which sound "tall," only we know the man. One private was blown fifteen feet into the air and came down only a little dazed; in another, who had a large, sloughing wound in the back, he found the nose cap, complete, and weighing over a pound, of an eighteen pounder shell. The posterior, compact bony surface of the sacrum and coccyx was broken up, yet there was no paralysis of the muscles of defecation or micturition, and the man recovered completely.

It was felt that meetings ought to be held to discuss difficulties and new methods, so the Alexandria Medical Military Society was formed. There were sometimes sixty to ninety there, and the younger men were encouraged to speak. They had the benefit of hearing resident doctors who had had experience in local diseases, and all had the advantage of listening to the big English doctors and surgeons, notably Sir Victor Horsley, on Gunshot Wounds of the Head. Cairo followed suit in getting its own medical society, and the Military Pathological and General Hospital Laboratories invariably lightened the darkness of ever recurring problems.

The temptation in reviewing this book is to pick out the plums as Tubby travels from Gallipoli to Egypt and Palestine, but it would not be fair to the reader. He will find no incursion into or undue criticism of things purely military, but chapters dealing with matters surgical, the sick and convalescent soldier, dental work, the founding of a Medical Military Library by Colonel F. M. Sandwith, with its five thousand volumes and three thousand pamphlets, and his vigorous antifly campaign with weekly lectures to the twenty-four thousand men in or near the city of Alexandria.

Sandwith, Horsley, and many other valuable men were called by Death, but the duration of war seemed endless and the dignified quietness of Harley Street, with its gloomy anterooms and solemn butlers, very far away, indeed. Compensations in the way of an inspective visit to Jerusalem, Jaffa, Hebron, though meaning some work, gave much pleasure; yet strict orders not to expose himself on the skyline near Gaza made him remember he was not on a tourist journey, but that the Turkish lines stretched away to the right towards Beersheba, where the range of hills trending northward toward Hebron could be seen.

Wise criticism, wise suggestions, are made concerning the consultant generals, their work and authority, with which all such must agree, particularly the gaining of knowledge concerning the climatic conditions and local diseases of each place. The disaster of not knowing was fully shown with the American forces encamped on the Mexican Border in 1917, when dysentery and pneumonia became rife.

There is no chance of Tubby's book being found among the piles of war literature now seen at the bookstalls for almost nothing, for it is designed to help men who will face the same evils in the next war.

GENITOURINARY SURGERY.

Transactions of the American Association of Genitourinary Surgeons. Thirty-second Annual Meeting, held at the Mayo Clinic, Rochester, Minn., May 31, June 1, and June 2, 1920, vol. xiii. Baltimore: Williams & Wilkins Company, 1920. Pp. xi-279.

These transactions consist of papers read at the thirty-second annual meeting of the association, held at the Mayo Clinic in June, 1920. There are fourteen papers of unusual merit, of which four relate to the genital organs and nine to purely urinary organs. Of especial interest are the papers on Abscess of the Prostate and Solitary Cysts of the Kidney, by H. L. Kretschmer; Urinary Calculi, by E. L. Keyes, Jr.; Kidney Tuberculosis Complicated by Impacted Pelvic Calculus, by H. A. Fowler; Infiltration Anesthesia of the Internal Vesical Orifice for the Removal of Minor Obstructions, by J. W. Caulk, and Radical Cure of Tuberculosis of the Seminal Tract, by H. H. Young.

The association is to be congratulated on the excellent character of the papers and the manner in which they have been published.

NURSING.

A Textbook of Pharmacology and Medical Treatment for Nurses. By J. M. Fortescue-Brickdale, M.A., M.D. (Oxon.), M.R.C.P. (Lond.), Captain, R.A.M.C. (T. F.); Physician to the British Royal Infirmary and Clinical Lecturer in the University of Bristol; Formerly Lecturer on Pharmacology in the University of Oxford. London: Henry Frowde (Oxford University Press) and Hodder & Stoughton, 1920. Pp. xiii-382.

The attitude of the average nurse toward the doctor and her patients is generally one of Casabianca-like obedience with sometimes the same result—that of being blown up for too servile attention to orders, or, finding that anxiety to know more brings in no more dollars, nor commendation from nurse or doctor, she takes no interest in new methods, new remedies, new results, and, if the doctor delayed his call, would continue the treatment irrespective of the patient's idiosyncrasies. The author recognizes one great difficulty. "Modern Pharmacology is an application to medicine of chemistry, physics and physiology, animal and vegetable. Of the first two, nurses, as a rule, know little or nothing." He has omitted experimental details which require laboratory training. He gives a clear outline of the limitations and curative actions of the various drugs, and, in the second part, the practical treatment of diseases without any description of clinical or pathological methods or doses. Rare morbid conditions are not dwelt on, but are to be learned from separate textbooks.

Having carefully explained what he does not give, the covers of this big volume are opened and 172 pages of pharmacological information confront us: all the old drugs and the new, their real names, their everyday names, their action on man, concluding with two chapters on animal extracts, Hormones, Sera and Vaccines. Any nurse in the country might find great pleasure in finding during a walk with the book that many of the drugs which are so impressive in prescriptions are the common plants which look up to us from the wayside or field. The French country girl is familiar with them all, as there are always two or three herbalists in the village with their stores full of dried plants, particularly the Artemesia for menstrual pain, wild carrot for bladder ills, cherry stalks for drunkenness. Monkshood and belladonna are given alternately for fever, and there was a certain amount of guess wisdom in the old gatherers of herbs.

A prompt study of treatment as necessity arises will give the nurse a sure basis of knowledge of terms and the wherefore of the remedies or methods used; an earnest study by her will ease the doctor's mind as he surveys the nurse to be left in charge. Will she bully the patient or be unwisely yielding? Will she wake him up to give him the sleeping draught "as directed," or wake the doctor telephonically at early worm hours to say the patient is going on all right?

The little chapter on Radiotherapeutics at the end ought to excite curiosity; a trifle more explanation of terms would be an aid to remembering, but, anyway, the perplexed nurse will be grateful to the man who has gathered so many of her difficulties and so efficiently solved them.

THE PSYCHOLOGY OF NURSING.

The Psychology of Nursing. By Aileen Cleveland Higgins (Mrs. John Archibald Sinclair, A. B., R. N.), War Relief Superintendent of the Stanford School for Nurses, San Francisco, California; Instructor in War Emergency Courses, University of. California; Author of *May Day Magic, The Dopters, Dream Blocks,* etc. New York and London: G. P. Putnam's Sons, 1921. Pp. xvi-337.

The lady who wants to teach nurses how to "understand their mental life," and, this knowledge gained, to set to work on the patient's mind, brings few characters along—five nurses, five patients, each separately having the various dispositions which require psychological handling. In the pages, *Mary Anderson,* nurse, is referred to, or Mrs. O'Brien, patient; you just look them up and there you are, their virtues and faults all given. The author works them like a skilful ventriloquist to help the reader to develop an "understanding of the fundamental principles underlying human conduct," "and to provide a basis for subsequent courses in psychiatry or ethics."

Each chapter ends in references to authors and questions for reeducation (of the nurse). All the sins, failings, likely to attack are given in detail: she is fully prepared for a confessor, but no one is forthcoming, unless she tries one of the doctors!

They are wise, pointed questions, and the whole book is a careful résumé of all those jagging, irritating senseless, wearing ways which annoy in a nurse and have to be patiently eliminated in a patient. There is no mention of the love (fancy) so often seen in sick men and so embarrassing for the nurse. A young lieutenant of nineteen with a shelled leg wrote home that he was going to marry his nurse when well, and had bought the ring. The girl was twenty-four. Of course, permission was refused, and he wrote of a broken heart. After a long stay in hospital he went to the convalescent home, and found another. Writing to his sister he said that the jeweler had agreed to change the ring for a brooch, which would do for a preliminary gift; so the cardiac disturbance was not worried over by his family.

"If you dare touch those bandages, I'll kiss you," threatened a charming young soldier who hated pain. But she had to, so did he, and the omniscient nurse saw it. Now, what was the psychologic action? The book is silent.

Seriously, we like the book and recommend it, but why not have called it *The Tactful Nurse?* The title is too big, too deep, too high, too alarming for the youthful nurse.

FRANCIS BRETT YOUNG.

The Tragic Bride. By Francis Brett Young. New York: E. P. Dutton & Co., 1921. Pp. viii-254.

If the unsophisticated, motherless daughter of Sir Jocelyn Hewish, living far away in County Galway, had been born in this century, her innocent ignorance would have been battered all to pieces by gifts of books concerning That Which Every Girl Should Know, and Mrs. Payne, mother of the lover, Arthur, would have whirled her weirdly charming, perplexing, mendacious, thieving, cruel boy to a psychoanalyst instead of experimenting on him with many tutors and methods. At first, the beautiful Gabrielle is hostess to young Lieutenant Radway for a few days, and, with her father's laughing approval, become half engaged. But the night before his ship sails, when out with Gabrielle, he slips on the sun iced turf of the mountainside and is killed by the bursting of his gun.

The old Irish housekeeper, once her father's mistress, attributes the girl's prolonged sorrow to approaching motherhood, and gets her father to tell her so. The supposition is entirely wrong, but is innocently accepted by Gabrielle as a natural sequence of her love. There is only one way to hide the disgrace, but no suitable man in that wild region, so Considine, the young Protestant minister, her tutor, is persuaded to be the one to marry her. She does not love him, but accepts the inevitable. The baby is stillborn, and is, of course, Considine's, not Radway's. After Sir Jocelyn's death they move away to a living in Devonshire and take a few pupils, among them one Arthur Payne, an only child, who is a curious study, psychologically, but one well known to doctors. He is charming, goodlooking and conscienceless, and, had he been a poor boy, would have been landed in jail. Gabrielle takes him in hand, although horrified by seeing him torture a little rabbit, a habit of his with animals. He improves because he forms good habits through love of her, and she opens her heart cheerfully to the surprise and storm of real love.

But the boy's mother detects the attraction and separates them. Gabrielle returns home from a visit to Mrs. Payne by the 7.50 morning train. Arthur goes to Oxford and eventually to New Zealand with a wife, and Mr. Considine, when out with his wife, stumbles over a gate with his gun, and, behold, he is not. Of the tragic bride we hear no more, save of her early death soon after, cause not given, but we are sorry she died so delightless. Her innocence, which laid the foundation of her woe, is not uncommon, even in these days of hundreds of little sexual books written by little men. There are some few girls who imagine that to love means pregnancy, and who have wept agonizingly over this supposed sequel and its discovery. Novels are more explicit now, newspapers more so, but the girl of whose innocence her mother boasts does not easily understand, and the truth, too long withheld or clumsily told, has had disastrous results.

The case of Arthur may meet with incredulity from the ignorant, but two of the biggest liars I knew were bright, wellborn boys, and one of them was also a thief. A third, a man, confessed to me that when young he had killed the white chickens, rabbits, etc., in his father's farmyard; he had an unaccountable hatred of white creatures, though fond of animals generally.

These habits often disappear under strong influence or at puberty, or are repressed, or crop up again in a new guise, such as the cruel teasing youth finding vent as a man in thrashing his children harshly, or quietly, devilishly, politely driving his wife to despair, he enjoying her suffering.

There is one thing, the author does not make his characters a peg to hang theories on, nor his tale the jam to hide them in. He does not even invite us to solve psychological problems, but tells an interesting story with his usual graceful fluency.

MYSTERY.

Ghosts. A Samuel Lyle Mystery Story. By Arthur Crabb, Author of *Samuel Lyle, Criminologist,* etc. New York: The Century Company, 1921. Pp. 261.

The author of the book is on the right tack to become a mystery writer, but he must try to avoid being reprehensibly and unnecessarily mysterious. Here it is over the theft of jewelry from a seaside house, and as the theft incriminates no one in the story, so it arouses no strong interest, nor can we condole with the loser, as she recovers her loss unexpectedly in an unthought of place. Author Crabb, like most modern fiction writers, has enjoyed reading up on dual personalities and a few other medicolegal points which are styled "psychological problems," and gives the result of his reading. Why the book is called *Ghosts,* no one can say. They are not there, either as a cold shadow or a shuddery sigh or a dismal moan; and the stealer of the jewels is safe in prison on another charge and eating prison fare, whereas real ghosts can outdo MacSwiney in the fasting way, and "squeak and gibber" (according to Shakespeare) with unalloyed joy.

But another thread running through the story is that of the love affairs of Duncan Webb, the jewel finder, and a young war widow, Marjorie Thurston, with an infant daughter. When not proposing to her, he is discussing the identity of the robber, and both matters are satisfactorily settled by the arrival of Samuel Lyle, the criminologist, on a visit. He finds the thief easily, and also that it is the clear duty of Marjorie to marry Duncan. The main defect is that we cannot get interested in that robbery; it is an ordinary one, with a dash of medicolegalism and ruffled courtship to give it a double interest.

◆

New Publications Received

[We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.]

MAYFAIR TO MOSCOW. Clare Sheridan's Diary. New York: Boni & Liveright, 1921. Pp. 239.

GROWTH OF THE SOIL. Translated from the Norwegian of Knut Hamsun by W. W. Worster. Two Volumes. New York: Alfred A. Knopf, 1921.

ATLAS DE SYPHILIMETRIE. Les Conditions experimentales de l'extinction de las Syphilis. By Arthur Vernes, Directeur de l'institut Prophylactique de Paris. 100 Graphiques. Paris: A. Pradier, P. Boll, 1920. Pp. 121.

INFEKTION UND IMMUNITAT. Von Dr. M. Loewit, weil, o. o. Professor der allgemeinen und experimentellen Pathologie an der Universitat in Innsbruck. Nach dem Tode des Verfassers herausgegeben von Prof. Dr. Gustav Bayer. Mit 33 Texfiguren und 2 farbigen Tafein. Berlin: Urban & Schwarsenberg, 1921. Pp. viii-550.

A MANUAL OF PHYSICS THEORETICAL AND PRACTICAL FOR MEDICAL STUDENTS. By Hugh C. H. Candy, B. A., B. Sc. (Lond.), F. I. C. Lecturer on Chemistry at the London Hospital Medical College and Arnott Professor of Natural Philosophy in Queen's College, London. Second Edition enlarged. With a Color Frontispiece and Figures in the Text. New York: Paul B. Hoeber, 1920. Pp. viii-451.

EDEMA AND NEPHRITIS, a Critical, Experimental and Clinical Study of the Physiology and Pathology of Water Absorption in the Living Organism. By Martin H. Fischer, M. D., Eichberg Professor of Physiology in the University of Cincinnati. Third and Enlarged Edition. New York: John Wiley & Sons, 1921. Pp. vii-922.

THE AMERICAN YEAR BOOK OF ANESTHESIA AND ANALGESIA. F. M. McMechan, A. M., M. D., Editor. 1917, 1918. New York: Surgery Publishing Company, 1921. Pp. xxv-483.

IN CLAY AND IN BRONZE. A Study in Personality. By Brinsley MacNamara. New York: Brentano's, 1920. Pp. 262.

CHARACTEROLOGY AN EXACT SCIENCE. Embracing Physiognomy, Phrenology, and Pathognomy. Reconstructed, Amplified, and Amalgamated, and Including Views Concerning Memory and Reason and the Location of These Faculties Within the Brain, Likewise Facial and Cranial Indications of Longevity. By L. Hamilton McCormick. Illustrated. New York and Chicago: Rand, McNally & Co., 1920. Pp. xxxvii-646.

CLINICAL METHODS. A Guide to the Practical Study of Medicine. By Robert Hutchison, M. D., F. R. C. P., Physician to the London Hospital; Physician to the Hospital for Sick Children, Great Ormond Street, and Harry Rainy, M. D., F. R. C. P. Ed., F. R. S. E., Physician to the Royal Infirmary, Edinburgh. With Sixteen Color Plates and 157 Figures in the Text. Seventh Edition, Revised throughout. New York: Paul B. Hoeber, 1921. Pp. xiii-685.

HIGHLAND LIGHT AND OTHER POEMS. By Henry Adams Bellows. New York: The Macmillan Company, 1921. Pp. x-135.

THE BEHAVIOR OF CROWDS. A Psychological Study. By Everett Dean Martin. New York and London: Harper & Brothers, 1920. Pp. 311.

THE WATERING PLACES OF SWITZERLAND. A Description of the Most Famous Health Springs in Switzerland and Their Therapeutic Factors. Pp. 86.

WHITE SHADOWS IN THE SOUTH SEAS. By Frederick O'Brien. With Many Illustrations from Photographs. New York: The Century Company, 1921. Pp. xiv-450.

A MANUAL OF SURGERY. For Students and Physicians. By Francis T. Stewart, M. D., Formerly Professor of Clinical Surgery, Jefferson Medical College; Surgeon to the Pennsylvania Hospital. Fifth Edition. With Five Hundred and Ninety Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xi-1086.

TYPHUS FEVER, WITH PARTICULAR REFERENCE TO THE SERBIAN EPIDEMIC. By Richard P. Strong, M. D., S. D.; George C. Shattuck, A. M., M. D.; Hans Zinsser, M. D.; A. W. Sellards, A. M., M. D., and J. Gardner Hopkins, M. D. Cambridge: Harvard University Press, 1920. Pp. viii-273.

THE CONTROL OF SEX INFECTIONS By J. Bayard Clark, M. D., Fellow of the New York Academy of Medicine; Fellow of the American College of Surgeons; Member of the American Urological Association, American Association of Genitourinary Surgeons, International Surgical Society; Sometime Major Medical Corps, U. S. Army, etc. New York: The Macmillan Company, 1921. Pp. vii-132.

THE CRADLE OF THE DEEP. An Account of a Voyage to the West Indies. By Sir Frederick Treves, Bart., G. C. V. O., C. B., LL. D., Sergeant Surgeon to H. M. the King; Surgeon in Ordinary to H. M. Queen Alexandria. With Illustrations from Photographs by the Author, and Maps. New York: E. P. Dutton & Co., 1920. Pp. xii-378.

PSYCHOLOGY AND PSYCHOTHERAPY. By William Brown, M. A., M. D. (Oxon.), D. Sc. (Lond.), Reader in Psychology in the University of London (King's College); Clinical Assistant in Neurology, King's College Hospital; Late Medical Officer in Charge of Craiglockhart War Hospital for Neurasthenic Officers; Author of *The Essentials of Mental Measurement.* With a Foreword by William Aldren Turner, C. B., M. D. New York: Longmans, Green & Co.; London: Edward Arnold, 1921. Pp. xi-196.

ORTHOPEDIC SURGERY OF INJURIES. By Various Authors. Edited by Sir Robert Jones, K. B. E., C. B., F. R. C. S., Director of Orthopedics, St. Thomas's Hospital; Surgeon, Royal National Orthopedic Hospital; Consulting Orthopedic Surgeon, Royal Infirmary, Liverpool; Honorable Adviser to the Ministry of Pensions (Orthopedic Surgery). Volume I and Volume II. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1921. Pp. vol. i, xv-540; vol. ii, pp. vii-692.

THE WASSERMANN TEST. By Charles F. Craig, M. D., M. A., F. A. C. S., Lieutenant Colonel, Medical Corps, United States Army; Professor of Bacteriology, Parasitology, and Preventive Medicine, and Director of Laboratories, Army Medical School, Washington, D. C.; Formerly Curator, Army Medical Museum, and Commanding Officer, Yale Army Laboratory School. Second Edition, Revised and Enlarged. Illustrated with Colored Plates, Halftone Plates, and Sixty-one Tables. St. Louis: C. V. Mosby Company, 1921. Pp. 279.

SYPHILIS AND VENEREAL DISEASES. For Students and Practitioners. By C. F. Marshall, M. D., M. Sc., F. R. C. S., Formerly Assistant Surgeon to the Hospital for Diseases of the Skin, Blackfriars, and Resident Medical Officer to the London Lock Hospital, and E. G. French, M. D., Ch. B., F. R. C. S. (Edin.); Lieutenant-Colonel, R. A. M. C. (Retired); Late O. C. Military Hospital, Rochester Row, London, and Fifty-first and Fifty-sixth General Hospitals for Venereal Diseases, France; Formerly House Surgeon for Venereal Wards, Royal Infirmary, Edinburgh. Being the Fourth Edition of *Syphilology and Venereal Disease.* New York: William Wood & Co., 1921. Pp. xi-433.

THE TRAGIC BRIDE. By Francis Brett Young. New York: E. P. Dutton & Co., 1921. Pp. viii-254.

FLAME AND SHADOW. By Sara Teasdale, Author of *Rivers to the Sea, Love Songs,* etc. New York: The Macmillan Company, 1921. Pp. 144.

A CHAIR ON THE BOULEVARD. By Leonard Merrick. With an Introduction by A. Neil Lyons. New York: E. P. Dutton & Co., 1921. Pp. xiii-390.

THE SURGICAL CLINICS OF NORTH AMERICA. Volume I, No. 1, Philadelphia Number. Philadelphia and London: W. B. Saunders Company. Pp. x-259.

LES BASES SCIENTIFIQUES DE LA METHODE D'ORTHOPEDIE INSTRUMENTALE. By Gabriel Bidou, M. D. Paris: Editions de la "Vie Medicale," 1921. Pp. 12.

DEATH AND ITS MYSTERY, BEFORE DEATH. Proofs of the Existence of the Soul. By Camille Flammarion. Translated by E. S. Brooks. New York: The Century Company, 1921. Pp. 322.

THE THREE TAVERNS. A Book of Poems. By Edwin Arlington Robinson, Author of *The Man Against the Sky, Merlin, a Poem,* etc. New York: The Macmillan Company, 1920. Pp. 120.

MYSTIC ISLES OF THE SOUTH SEAS. By Frederick O'Brien, Author of *White Shadows in the South Seas,* etc. With Many Illustrations from Photographs. New York: The Century Company, 1921. Pp. xv-534.

MEDICAL NOTES. By Sir Thomas Horder, M. D. (Lond.), F. R. C. P. (Lond.), Physician, with Charge of Out-Patients, to St. Bartholomew's Hospital. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1921. Pp. xi-112.

FEEBLENESS OF GROWTH AND CONGENITAL DWARFISM, WITH SPECIAL REFERENCE TO DYSOSTOSIS CLEIDOCRANIALIS. By Dr. Murk Jansen, O. B. E., Lecturer on Orthopedic Surgery, University of Leiden, Holland. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1921. Pp. xii-82.

THE SCIENCE OF OURSELVES (A Sequel to *The Descent of Man*). By Sir Bampfylde Fuller, K. C. S. I., C. I. E., Author of *Studies of Indian Life and Sentiment, The Empire of India, Life and Human Nature,* and Other Works. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1921. Pp. ix-326.

THE PHYSIOLOGY OF PROTEIN METABOLISM. By E. P. Cathcart, M. D., D. Sc., F. R. S., Gardiner Professor of Chemical Physiology, University of Glasgow; Formerly Professor of Physiology in the University of London. New Edition. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1921. Pp. vii-176.

GRAPHIC METHODS IN HEART DISEASE. By John Hay, M. D., F. R. C. P., Honorary Physician, Liverpool Royal Infirmary; Honorary Consulting Physician, Ministry of Pensions; Late Consulting Physician in Diseases of the Heart (Western Command). With an Introduction by Sir James Mackenzie, M. D., F. R. C. P. London: Henry Frowde, Hodder & Stoughton (Oxford University Press), 1921. Pp. xix-178.

A CONSULTING SURGEON IN THE NEAR EAST. By A. H. Tubby, C. B., C. M. G., M. S. (Lond.), F. R. C. S. (Eng.), a Consulting Surgeon to the Mediterranean and Egyptian Expeditionary Forces, 1915-1919; Lieutenant Colonel, R. A. M. C (T.), and Formerly Temporary Colonel, A. M. S.; Consulting Surgeon to the Westminster, Royal National Orthopedic, Evelina, and Christ's Hospitals, etc. London: Christophers, 1920. Pp. xiii-279.

A COMPEND OF HUMAN PHYSIOLOGY ESPECIALLY ADAPTED FOR THE USE OF MEDICAL STUDENTS. By Albert Brubaker, A. M., M. D., Author of *A Textbook of Physiology;* Professor of Physiology and Medical Jurisprudence of the Jefferson Medical College; Formerly Professor of Physiology in the Pennsylvania College of Dental Surgery; Formerly Lecturer on Anatomy and Physiology in the Drexel Institute of Art, Science, and Industry; Fellow of the College of Physicians of Philadelphia. Fifteenth Edition. With Twenty-six Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. viii-264.

Practical Therapeutics

TREATMENT OF MALARIA FROM THE VIEWPOINT OF THE LIFE CYCLE OF THE CAUSATIVE ORGANISM.

By Anne Young, M. D., Dr. P. H., D. T. M.,
University, Alabama,

Professor of Hygiene, University of Alabama.

It is beyond the average practitioner to enumerate the multitudinous ways of treating malaria even with the drug *par excellence,* quinine. The variation of opinions centres largely around the question of timing the doses.

Without further reference to methods, let us consider the life cycle of the organism of the tertian type. What is happening in the blood of the patient during the first attack of malaria? The protozoa have been introduced by the bites of infested anopheles mosquitoes, and in one week to the day the patient has a frank attack of fever. The statement of one week is made on the strength of the fact that the writer on two occasions suffered many bites from mosquitoes, and in each case on the eighth day there was high fever preceded by a few days of malaise.

In treating malaria the science of an expert is just as necessary as in attacking an enemy who uses shot, shell and gas. The strategy is to find the weakest point in the enemy's lines and strike there when he is least prepared. The crucial time to attack the plasmodium in the system is when it is in its least resistant stage. For the tertian type this is the large ring stage. The accompanying chart may show the strategic time better than words.

The organisms are intracorpuscular during the fever period; in other words, the life of the plasmodium from the time of its entrance into the red blood cell as a sporozoite until its emergence as a merozoite. The organism reaches the large ring stage after the temperature begins to drop. It is during this phase in the life cycle that the quinine can act best, and not when the sporozoites are free in the blood stream. In other words, attack the animal during its intracorpuscular stage and not during the extracorpuscular stage.

In 1901 an American friend gave me an account of a method that was being tried out with much success in, I think, the New England Hospital for Women, Boston, Mass. The underlying idea was to have the quinine operating in the blood just at the time when the plasmodium reached its least resistant stage, the large ring stage in the tertian type. The theory was advanced that to attempt to kill the organism in the sporozoite stage, the stage of greatest resistance, was courting defeat.

The frequent microscopical examinations necessary to determine the large ring stage in tertian malaria is impossible for a busy practitioner. For tertian malaria it was found that if the temperature was allowed to reach its highest point, and then drop one degree or thereabouts before giving the quinine, that the organisms were readily destroyed. Care must be taken that the drop in temperature is permanent, because it frequently happens that in malaria there is a slight drop followed by a slight rise before the final drop to normal. The quinine should not be repeated until the same stage in the next cycle, if there is one. By this method a few doses of quinine will do the work without danger of cinchonism or chronic malaria.

While waiting for the proper temperature drop give no medicine unless the heart calls for stimulation, in which case spirit ammonia aromatic was found to be the drug of preference; diaphoretics only mask symptoms. The following is a cardinal rule: hands off until the organisms are in their least resistant stage, and then attack. Be sure that the quinine used is not adulterated.

The hit or miss administration of quinine is responsible for many cases of chronic malaria and cinchonism. In chronic cases the problem is more difficult, but here, too, the life cycle of the organism must be dealt with, not ignored. In the treatment of the quartan and subtropical types the timing of the dose must be controlled by the same principle.

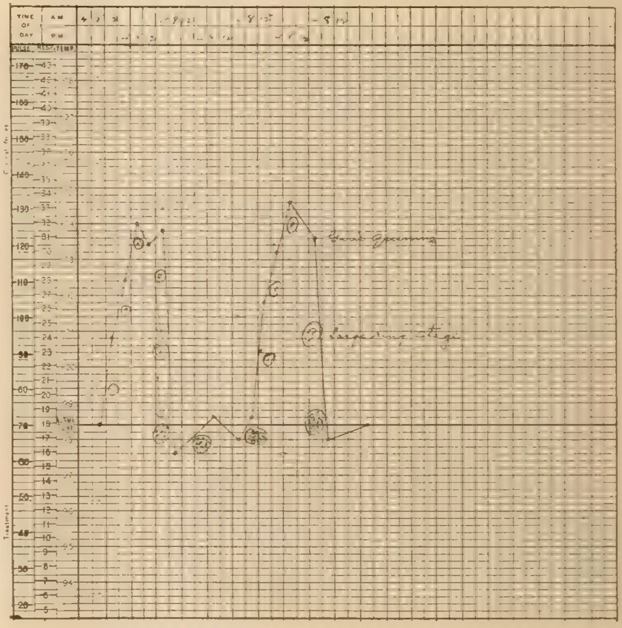


Fig. 1.—Showing best time for attack on the organism.

Place the patient under close observation and have the temperature recorded half hourly, and when there is a permanent drop of a degree from the highest point give the quinine. Give the quinine in solution and on an empty stomach, and rarely more than fifteen grains at a dose. In the tropics, where some patients refuse liquid medicine, give the powdered drug and follow with lime juice. Two cases come to mind—one of a woman with a 106° F. temperature, who had one dose of quinine; the other of a young man with a temperature of 107° F., who had only two doses. Ordinarily the drug is not cut off so abruptly, because of the possibility of variation in the developing period of the organisms. According to Rivas the drug should be given for three days at the same hour, about fifteen grains each time. When these cases were under observation we were having a very severe epidemic of malaria in Ceylon. The supply of quinine ran low. Bombay was the nearest place selling it at that time, and that meant a week in transit. The shortage of quinine accounts for the failure to continue the treatment, but, for some weeks at least, the patients referred to had no return of fever appreciable to themselves.

One celled animals resemble many celled animals, in that they may show a variation in the time of maturing. For twelve years I followed this method of treating malaria with far better results than those reported by other methods.

THE TREATMENT OF INSOMNIA.

By H. Bick, M. D.,
New York.

The ideal treatment of insomnia consists in treating the underlying cause. However, it is often difficult to determine the cause, and even then we find that we must resort to symptomatic treatment, which on most occasions gives satisfactory results. The following is a brief outline of the causes and treatment of insomnia:

1. All organic diseases, such as valvular heart disease and carcinoma, should be treated by drugs considered specific for the disease and in addition nothing but morphine by hypodermic injection or by mouth, codeine by mouth, or chloranodyne by mouth will help.

2. Functional heart disease, neurasthenia, nervousness and the insomnia of the climacteric, are best treated first by hydrotherapy, such as warm baths before retiring and alternating warm and cold showers during the day. For palpitating heart an ice bag should be placed on the precordium. Ammoniated tincture of valerian and strontium bromide may also be used. I have found veronal in doses of five to ten grains in a glass of warm milk before retiring best of all. In stubborn cases of insomnia the dose of veronal should be repeated in two hours' time.

3. In insomnia due to hyperpyrexia the underlying cause should be treated and in addition the body should be sponged with alcohol and water and cold compresses or an ice bag placed on the head. The room should be ventilated and quiet maintained.

4. Insomnia is often caused by gastric or intestinal indigestion and peptic ulcer. For indigestion, prophylactic treatment consists of placing the patient on a proper diet. The symptomatic treatment consists of the administration of suitable doses of soda bicarbonate and milk of magnesia, and if these fail to relieve, use twenty minims of chloranodyne in water and repeat this every two hours until the patient is relieved. Peptic ulcers cause insomnia as a result of hunger pains. These are best relieved by the ingestion of small quantities of food, such as milk and biscuits, which may be repeated if the pains recur.

5. In insomnia due to pain the underlying cause should be located and relieved. It may be due to infection in some part of the body, so this should be relieved and in addition codeine or chloranodyne should be given by mouth. In all cases of pain chloranodyne may be used in preference to morphine by hypodermic injection.

6. Insomnia due to mania requires institutional treatment and sedatives, and it may be necessary to place the patient in a straight jacket.

816 East 180th Street.

Brain Repair.—C. C. Macklin and M. T. Macklin (*Journal of Archives of Neurology and Psychiatry*, April, 1920) have investigated the healing of aseptic lesions of the brain; the general features of the process are as follows: The defunct tissue is rapidly absorbed, and this is accomplished by a temporary cellular mechanism, made up of young bloodvessels, phagocytes and connective tissue—in fact, a granulation tissue. This, in turn, gives place to a rather light scar. There is noted very early a separation of the irreparably damaged tissue from that reparably damaged—a separation at first indicated by a zone of ameboid mononuclear phagocytes, and later accomplished by a membrane of connective tissue which is continuous above with the leptomeninges, and is joined by strands of connective tissue with the reticulum which comes to occupy the defect. Repair of the brain tissue immediately surrounding this isolating membrane is not complete, and its essential composition, although not altogether destroyed, is profoundly damaged. There is often an apparently insoluble residue of tissue which persists in the defect for two months or more; this, however, is very scanty. Red cell absorption was rather slow in these cases. An attempt is made to obliterate the defect, but this is often imperfect.

When foreign tissue was transplanted into the lesions there was some delay in healing. Delay was also noted when the exposure of the animal to trypan blue was prolonged.

Fully developed macrophages were present in the lesion in all stages from the second to the seventy-fourth day. Their period of most intense activity appeared to be from the second to about the sixth day, or shortly after. Though their sizes showed great variation, ranging from 7 microns to 42.7 microns, the average long diameter was found to be 13.6 microns.

The wound area, caused by stabbing with a hot needle in the brains of rats into whom trypan blue had been introduced two days before death, presents a characteristic picture. As was to be expected, the dead tissue (both that which was homogeneously coagulated by the heat and the cells which still retain something of their morphology) is diffusely and deeply stained blue. Often the cells take up more dye than does the intercellular material. This staining lasted from before the first hour to about the tenth day. It gradually became faint, as the stainable substance diffused out. Similar staining was found in cerebral lesions produced by other methods.

In the coagulated tissue in the early stages (six hour to three day) there were found granules which looked like the "dye granules" found in the cytoplasm of the macrophages. They are probably stained masses of protein decomposition products which have absorbed and concentrated the dye. They were also found in the coagulum at the eleventh and fifteenth days, where staining was of long duration.

Around the lesion in the early stages was an area of pale blue, probably the site of an inflammatory edema. This also occurred in concussion and depressed fracture cases, and in meningeal infection.

The superficial bloodvessels of the injured side were more heavily stained than those of the other—perhaps denoting an increased permeability. In the inflamed tissue vitally stained phagocytes were found lying along the bloodvessels and even composing part of their walls.

Vitally stained mononuclear cells appeared in the inflamed region at the end of the second day and disappeared by the sixth day, or shortly thereafter. They contained much lipoid material. The fat droplets and dye granules seem to occupy separate protoplasmic compartments. Blood pigment is found in cytoplasm also, being most abundant about the fifteenth day. Rarely are entire corpuscles found within the cells. As compared with macrophages occurring in wounds of other tissues, these cells were remarkable for the small amount of dye they took up, and the short duration of their staining, when exposed to the dye for forty-eight hours. Then, too, in the brain cases many phagocytes contained no dye, whereas in the fracture cases practically all contained dye. This marked difference in response of brain macrophages toward trypan blue as compared with those occurring in other tissues is in all probability due to the larger amount of fat in which they are situated. Apparently these brain macrophages display phagocytic activity toward fat and blood pigment long after they cease to respond to the dye when exhibited for a period of forty-eight hours. Similar phagocytes appeared in the pia-arachnoid membrane around the lesion. They took the dye a little more avidly and somewhat earlier than did the macrophages in the brain tissue.

If animals which had been operated on were allowed to live for from eleven to fifteen days after injection of the dye, the macrophages were quite deeply stained. Such prolonged staining, however, seemed toxic to the animals, as evidenced by the high mortality. It inhibited to a very marked degree the absorption of the waste material, and delayed healing.

The macrophages of the brain lesions differed also from similar cells occurring in other tissues, in that no transitional cells from lymphocytes were found, and that they multiplied by mitosis at the site of injury. They were apparently recruited in part from the neuroglia, for hypertrophied neuroglia cells containing dye granules and other material were found in the area of inflammation. Some also arise from the endothelium of the bloodvessels, for endothelial cells in the injured region became enlarged and filled with foreign material. They then behave like the other macrophages. By careful dissection of the fresh or formaldehyd fixed specimens, capillaries lined by large, fat endothelial phagocytes may easily be isolated. These may also be found in the sections. It is possible that the cells of the pia-arachnoid, growing down into the wound, and adventitia cells from the ingrowing blood vessels, add their quota to the phagocytes, as found by several workers.

In a small abscess of the brain the wall was composed mainly of large macrophages. These stained very brilliantly with trypan blue—much more so than the brain macrophages of the aseptic cases at any period. They resembled closely the macrophages about fractures. This abscess specimen was examined at the twelfth day—a stage when no dye was found in the ordinary brain macrophages. This circumstance suggests that the type of material absorbed may have something to do with the positive reaction of the macrophage toward the vital dye. No dye granules were found in the polymorphonuclear leucocytes of the abscess.

Introduction into the brain lesions of other tissue material, such as liver, spleen, muscle, etc., in an effort to attract macrophages similar to those of inflammatory lesions in other tissues (i. e., cells that would take up more dye, and exhibit developmental forms arising from lymphocytelike cells) gave negative results.

The function of the macrophages apparently is to ingest the products of tissue decomposition. It appears that they subject these products to a form of digestion (Shipley). It is even suggested that fat may be transported by the macrophages to minute bloodvessels, through the walls of which the globules pass, to be finally carried off in the blood stream. In any event, the greater amount of absorption of waste materials from the wound site seems to take place via the blood stream, although a little doubtless diffuses into the adjoining subarachnoid space and lateral ventricle.

The macrophages are incorporated in the scar formed by the fibroblasts, although there is no evidence in this work that they actually proliferate to form that scar. Some were found in the defect more than two months after the operation.

Hypophyseal Duct Tumors.—William C. Duffy (*Annals of Surgery*, November, 1920, and December, 1920) concludes that:

1. Although there are embryological possibilities for growth of squamous epithelial neoplasms between the pharynx and the sella turcica, the great majority of such tumors develop from the squamous epithelial embryonic rests of the hypophyseal duct either in the infundibulum or beneath the upper surface of the anterior lobe of the hypophysis. Of either origin the tumor usually presents above the sella.

2. In view of the fact that a majority of these tumors are suprasellar in position from the beginning and that nearly all early assume this position, it appears that they are especially suitable surgically for an intracranial approach. In tumors which arise beneath the capsule of the anterior lobe the latter becomes flattened out below and a transsphenoid approach may destroy the entire anterior lobe of the hypophysis.

3. The tumors derived from embryological remnants of hypophyseal duct are quite different in

structure from those derived from Rathke's pouch or cleft (between the anterior and posterior hypophyseal lobes). From the duct *reliquii* develop papillary squamous epithelial cysts and solid and cystic, frequently calcified squamous epithelial adamantinomatous tumors; whereas, from Rathke's pouch or the cleft develop simpler cysts lined by a single layer of ciliated cylindrical epithelium.

4. The hypophyseal duct tumors histologically may be divided into three groups. Group I is that of the papillary cyst or intracystic papilloma which is histologically the most benign example of hypophyseal duct tumors. Group II includes the uncalcified or calcified adamantinomas (solid or cystic), the rarer tumors which closely resemble the basal epithelioma of skin, and the more complicated adamantinomas, the "autochthonous teratomas" of Ewing. The tumors of this group may show criteria of local malignancy, but do not metastasize. Group III comprises a rare group of cases which show all the ear-marks of malignant spinal cell carcinoma and may metastasize extensively to the cervical lymphatics.

5. The frequent occurrence of calcification in hypophyseal duct tumors is an important diagnostic fact. At variance with the statement of Jackson (1916) that röntgenography is usually negative, in each adamantinomatous tumor described by the writer the röntgenograms showed a suprasellar calcified nodule. The rarity of such calcified shadows in tumors of other types (adenomas, endotheliomas, etc.) makes such nodular shadows almost pathognomonic.

6. The occurrence of bone in hypophyseal duct adamantinomas is not due to the presence of a congenital osseous anlage but is a result of activity on the part of the stroma, apparently excited by the presence of calcium salts which have been deposited in the necrotic stratified epithelium. The mechanism of osseous change is apparently similar to that described by Nicholson for the same phenomenon in calcified cutaneous epitheliomas.

7. Hypophyseal duct tumors of the infundibulum not infrequently break into the third ventricle. To the contrary, the tumors of the ependyma or choroid plexus of the third ventricle are very rarely present in the suprasellar region; this is explained by spread of the growth along the intraventricular paths of least resistance.

8. During operations on suprasellar cysts in intimate contact with the floor of the third ventricle microscopic demonstration of squamous epithelium from the lining of the cyst will assure the surgeon that the cyst (or solid tumor) originated below the ventricle. A pathological fact of importance for the surgeon to appreciate is the intimate and delicate relation of such cysts with the floor of the ventricle, from which they are frequently separated only by a very thin membrane.

9. The very frequent occurrence of the clinical syndrome of dystrophia adiposogenitalis (Fröhlich) in patients suffering with hypophyseal duct (squamous epithelial) tumors makes the pathological findings in the genital organs of two individuals of particular interest. In the uterus of a twenty-year-old girl there was an atrophic endometrium, almost equal to that of the senile type, associated with cessation of the process of ovulation (ovaries). The testes of a thirty-year-old man showed a marked atrophy of the spermatogenous epithelium.

10. In the literature reports of fourteen additional hypophyseal duct tumors have been found.

Correlation of Results of Treatment of Goitre by Surgical and X Ray Methods.—G. E. Richards (*Canadian Medical Association Journal,* November, 1920) summarizes his paper as follows:

1. The x ray is capable of definitely modifying the function of the diseased thyroid gland in a favorable manner.

2. The cases best suited for treatment are the toxic types, and of these the early cases are more favorable than the older more chronic ones.

3. Improvement may be expected in about eighty per cent. of all cases and complete cure in fifty per cent.

4. The length of time required for each case will average about six to eight weeks.

5. Cases which are not definitely cured, but which are improved are made, thereby, much safer surgical risks.

6. Adenomatous goitres do not respond well, and if no toxic symptoms are present the method is not to be recommended.

7. Cystic types without toxicity do not respond at all, and if relief is sought, these together with uncomplicated adenomata are purely surgical.

8. The advantages of the method are the ease with which it may be carried out, its safety to life, its painless nature, and freedom from shock. Its disadvantages are the length of time required, and the possible production of fibrosis of the capsule.

Blastomycosis.—John T. Moore (*Surgery, Gynecology and Obstetrics,* December, 1920) reports a case of blastomycosis with the following conclusions:

1. The infection was probably introduced through the mouth from the splinters habitually carried in the mouth.

2. The treatment was hardly radical enough in destroying the various recurring foci of the disease.

3. The eye should have been sacrificed earlier, and radium used in the orbit as the x ray was apparently the best agent used in the treating of the lesions on the face and neck.

4. The disease remained more or less local for a long time notwithstanding its tendency to spread through the lymphatics and become systemic. No organisms were obtained either from the urine or sputum, nor did we succeed in getting a culture from the blood.

5. The infection of the brain was possibly through the ophthalmic vein or through the veins of the scalp and emissary vein through the skull.

6. The study of the organisms in the different lesions and tissues showed a considerable variation in their size; those from the abscesses of the face, neck, and orbit showing the large forms, while no large forms could be found either in the pus or the tissue from the brain.

7. There are many budding forms of the organisms, but no evidence of endosporulation, as in coccidioides.

Sunstroke.—Balmukand (*Indian Medical Journal,* January, 1920) describes three forms of sunstroke, the syncopal, the asphyxial, and the hyperpyrexial, or seriasis. In the syncopal form the patient feels giddy, perhaps staggers and falls; becomes pale with a soft, small, fluttering pulse, breathing shallow, perhaps sighing but never stertorous; pupils dilated; skin cold, temperature subnormal, and there is total or partial unconsciousness. Recovery takes place after a short time, very likely with a splitting headache and feelings of prostration. Death may take place from continued heart failure. In the asphyxial form all of the above symptoms are present with the additional feature that respiration also fails. In the hyperpyrexial form the symptoms often develop gradually, the early indications being weakness, restlessness, sleeplessness, nausea, thirst, anorexia, giddiness, hurried breathing, profuse and frequent micturition and diarrhea.

The treatment of the syncopal form is to put the patient on his back in a cool, airy and shady place, and loosen his clothing. A little water should be dashed on his face and chest, and ammonia held to the nose. Stimulants may be given if needed. In the hyperpyrexial form the temperature must be reduced by cold bath, ice-water enemata, and applications of ice to body and head. Antipyretic drugs are of little service. Place the body on a stretcher with the head slightly elevated, cover it with a sheet with numerous pieces of ice closely packed about the head, and allow ice water to drip on the patient for thirty or forty minutes from an elevation of from five to ten feet. A fine stream of ice water on the forehead will stimulate and rouse the patient, but this measure is very powerful and must not be used longer than one or two minutes. Then digitaline should be injected hypodermically. The application of cold should be discontinued when the rectal temperature falls to 104° F. or when it has not exceeded 106° F., to 102° F. Then wrap the patient in blankets and apply heat. Strychnine must not be used. Inhalations of chloroform will best treat the convulsions.

X Ray Treatment of Acne Vulgaris.—W. D. Witherbee and John Remer (*Medical Record,* March 19, 1921) recommend x ray therapy for this condition, and warn against the concomitant use of external drugs or applications. Their technic is to place the patient in a recumbent position, with lead foil protecting the eyes and the hair of the temporofrontal region. The head is turned sidewise with the chin as near as possible in line with the shoulder; the tube is then centred over the zygoma and an exposure given of one quarter of one skin unit of unfiltered rays. The same dose is given to the opposite side, and if there be numerous active lesions on the forehead, center of the face and chin, an additional one eighth of a skin unit is given to this area. The routine dosage is one fourth skin unit weekly to each side of the face, continued two to three weeks after new lesions have ceased to appear, requiring usually twelve to sixteen treatments. Recurrences are rare if a dietary régime and rational constitutional measures are maintained after a full course of x ray treatment.

Renal Tuberculosis; Its Surgical Treatment.—H. G. Hamer (*Journal of the Indiana State Medical Association,* February, 1921) says that in unilateral renal tuberculosis early nephrectomy is indicated, and affords the only assurance of cure. When both kidneys are infected nephrectomy is contraindicated, unless one is practically destroyed and the other still has good functional capacity. Urinary symptoms usually persist after operation in proportion to their duration before operation. Under tuberculin treatment, with proper dietetic, climatic and hygienic management, many cases will be improved, but are likely to have recurrences later. Supposed cures are generally an expression of the phenomenon of excluded kidney. Seventy-five per cent. of unilateral renal tuberculosis cases will be cured by nephrectomy.

Hydatid Mole.—H. P. Kirtley (*Northwest Medicine,* February, 1921) says that the treatment of hydatid mole is promptly to empty the uterus. The best method, in view of the danger from hemorrhage, is probably by gauze packs until two fingers' dilatation is obtained, and then removal by the fingers. The use of a sharp curette is bad. All preparations should be made for transfusion, with a suitable donor at hand, and one should be ready to enter the abdomen in the event of an accident to the uterine muscle. The woman should be watched for at least two years, and, should malignancy appear, the uterus should be removed. The prognosis is doubtful. Sepsis is very liable to supervene; perforation of the uterus may occur spontaneously; bleeding may be uncontrollable; later malignancy may appear.

A Plea for More Active Treatment of Weak Feet in Children.—Jacob Grossman (*Western Medical Times,* March, 1921) says that the following exercises have been found to be very efficient:

1. Tiptoe exercises: The patient places the limbs in the attitude of moderate inward rotation, raises the body on the toes to the extreme limit, the limbs being fully extended at the knees, then sinking slowly, resting the weight on the outer borders of the feet in marked varus, repeating about twenty to thirty times.
2. Walking in bare feet.
3. Walking on the fore part of the foot.
4. Grasping motions with the toes; exercises with foot weights.
5. Bicycling has also proved of value and should be highly recommended.

These exercises should be practised twice daily, and should not be carried to the extent of tiring the patient.

Untoward Effects Following Arsphenamine.—William P. Boardman (*Boston Medical and Surgical Journal,* November 11, 1920) says that we have in arsphenamine a powerful drug for the treatment of syphilis, but one which may cause most serious lesions, especially of the skin, gastroenteric, nervous, and cardiovascular systems, sometimes leading to death. Although some of these disturbances are unavoidable, it would seem that many of them might be averted by care in the administration and careful judgment in regard to the dose, the intervals between the doses and the total amount given.

Miscellany

Latent Syphilis.—Hess Thaysen (*Lancet,* January 29, 1921) performed Wassermann tests on all patients over fifteen years of age who were admitted into hospital for all varieties of diseases. All tests were carried out at the State Serum Institute of Copenhagen, so that uniformity of technic was secured. Altogether, 783 patients were investigated. In 655 the Wassermann reaction was negative, but twenty-two cases of this group showed clinical evidence of syphilis. Of eighty-three patients with a positive Wassermann reaction signs of syphilis were present in twenty-four cases. The author carefully excluded a number of these patients where the reaction was not repeatedly positive with small amounts of serum, so that only thirty patients were held to have latent syphilis. He concludes, therefore, that among hospital patients of all ages above fifteen years in a large town, two and five tenths per cent. show evidence of latent syphilis. Two problems arise logically from such observations: Should a Wassermann test be performed on all patients admitted into the medical wards, and, further, should all cases of latent syphilis receive active antisyphilitic treatment? The author's reply to the first question is in the affirmative, especially in view of the aid in diagnosis and treatment of obscure cases that would accrue from such routine examinations. He finds it less simple to solve the second problem as to general treatment. He suggests active measures, if the patient is below fifty years of age, while he prefers waiting for clinical evidence of active syphilis, if the patient is older.

Pyelitis in Pregnancy. — Greer Baughman (*American Journal of Obstetrics and Gynecology,* February, 1921) notes that an untreated pyelitis may be the predisposing cause of an abortion or premature labor, and even after delivery the pyelitis usually persists, infecting the kidney, reducing its function or crippling it entirely. In the later months of pregnancy the presence of the presenting part in the pelvis, particularly if the patient is constipated, is the main predisposing cause, through direct pressure on the ureter as it passes over the brim. In the treatment of pyelitis, drainage is the most important factor, but the method to be used varies with the case. In some the giving of large amounts of hexamethylenamine water is sufficient to overcome the obstruction, particularly if a posture is found which will relieve the latter. Many cases respond to pelvic lavage with drainage by means of a pelvic catheter. In some cases one is faced with the necessity of a nephrostomy, induced abortion or premature labor. Rest in bed in such a manner that the best drainage may be obtained, proper diet, and attention to the bowels must not be overlooked. Detailed and illustrated reports of three well marked cases are given. In all the right pelvis was principally involved. In two the bladder was early and persistently affected; in the third it was occasionally inflamed. The colon bacillus was the exciting cause in two cases and Staphylococcus albus in the third. The symptoms improved in all cases under irrigation, but the most marked improvement followed delivery, showing that the obstruction was due to the uterus and its contents. A compensatory increase of function was noted on the side least involved. It was found possible to irrigate such cases within two weeks after delivery. None had any temperature elevation during the puerperium. A cure is possible even in enormous dilatations of the renal pelvis, as shown by one of the author's cases in which the pelvis held 100 mils.

Brain Tumor Simulating Lethargic Encephalitis.—Rebattu and Ferrier (*Presse médicale,* February 12, 1920) report the case of a man of forty-two years who was suddenly seized, in October, 1920, with headache, lumbar pain, and somnolence. One physician made a diagnosis of neurasthenia, another of brain syphilis. As the condition failed to improve, the patient was taken to a hospital a month after the onset. At this time he was in a subfebrile, lethargic condition, with myoclonic movements of the extremities and the abdominal wall. Lumbar puncture yielded clear fluid, without hypertension, without cells, and without abnormal chemical indications. The patient, who could be aroused only with difficulty but was able to answer questions satisfactorily, complained much of headache, mainly frontal but radiating to the occipital region. The pulse rate was slowed to sixty per minute. The diagnosis of lethargic encephalitis was considered highly probable. In spite of treatment by hexamethylenamine and fixation abscesses, the symptoms suddenly grew worse and the patient succumbed on the sixth day after hospitalization. At the autopsy no lesions of lethargic encephalitis were found, and in particular no punctate hemorrhages in the nerve centres. On the other hand, brain sections showed a gliomatous tumor of hen's egg size in the frontal lobe, without any meningeal involvement.

Etiology of Disseminated Sclerosis.—C. Da Fano (*Journ. of Nervous and Mental Diseases,* May, 1920). Cerebrospinal fluid and blood withdrawn from typical cases of disseminated sclerosis has been injected into rabbits and guinea pigs to produce lesions similar to those of disseminated sclerosis in man. An apparently specific spirochete has been found in positively inoculated animals. An apparently identical living spirochete has been detected in the brain substances of a case of disseminated sclerosis, on post mortem examination two hours after death.

Human cerebrospinal fluid kept for fourteen days in an ice chest and filtered through unglazed porcelain was still able to produce positive results in the animals upon which it was used, suggesting that the lesions of the central nervous system may be due to both a living virus and some toxin elaborated by it. Disseminated sclerosis cannot yet definitely be termed an infectious disease due to a specific spirochete, but investigators seem to be close to the goal.

Sacralization of the Fifth Lumbar Vertebra.—E. Ledoux and G. Caillods (*Presse médicale,* February 12, 1921) state that transformation of the fifth vertebra so that it resembles a portion of the sacrum is by no means an uncommon condition. A considerable proportion of patients who complain of lumbosacral pain and pains in the lower extremities present this type of malformation, which is readily discovered by means of the x rays. Within a few months the authors detected seven instances of this disorder. The transverse process of the fifth lumbar vertebra is not only larger than normal, so that it comes into more or less extensive contact with the ilium, but this extra development may attain to such a degree that the transverse process becomes transformed into an actual supplementary ala of the sacrum and participates in the sacroiliac joint. The space between the fifth lumbar vertebra, ilium and sacrum, through which the fifth lumbar nerve passes, is reduced to the size of an intervertebral foramen. The condition is especially frequent on the left side, yet in three of the authors' cases the patient referred the pain to the right side, although the actual malformation was on the left. The pain appears, as a rule, between the ages of twenty and thirty years; one case reported by the authors, however, was in a child five and a half years old. Study of the x ray plate from the latter case showed that "sacralization" was dependent upon overactivity of the complementary point of ossification in the transverse process, and that this point of secondary ossification began to function at a premature period, viz., at the age of five and a half years instead of at fifteen or sixteen years, as in the normal subject. The osteogenetic energies of the fifth lumbar vertebra are in these cases comparable to those of the first segment of the sacrum, and the development of the latter is somewhat inhibited by the presence of the large adventitious upper ala.

Pulmonary Tuberculosis in the Aged.—G. Ichok (*Paris médical,* January 15, 1921) points out that tuberculosis is not uncommon in old individuals, although the symptoms are very mild and inconspicuous, thus rendering the diagnosis difficult. Among twenty such patients ranging in age from sixty-four to eighty-two years, he found little in the way of a history of former hemoptysis or febrile attacks. At most these persons complained of weakness recurring occasionally after exposure to cold. Their general condition was relatively good. Dyspnea was frequently present, especially on exertion. Cough was almost constant and of long standing, but expectoration was often lacking, the sputum being swallowed, as in children. Bacilli were found in eight out of twelve cases. Auscultation was sometimes attended with difficulty because signs of emphysema almost completely masked those of tuberculous disease. Under these circumstances the complement fixation reaction for tuberculosis was used for diagnostic purposes, with marked success. Besredka's antigen was always used, and the technic was that of Bass and of Goldenberg-Fried. Seventeen of the twenty patients yielded a positive reaction; one of the negative cases had very advanced tuberculosis, with prospects of early fatal ending. The results lead the author to subscribe to Calmette's statement that a considerable proportion of the deaths ascribed to chronic bronchitis should actually be considered due to tuberculosis. Attention is called to the danger of undetected cases of tuberculosis in old persons among their family associates. Calmette has related an instance of three successive deaths from tuberculous meningitis in children cared for by an old governess with chronic bronchitis.

Percentage and Fractional Dilutions.—William Fletcher (*Lancet,* January 29, 1921) apologizes for offering elementary mathematics, but has noticed that many medical men stand in need of the suggestions offered. It is generally known that a forty per cent. solution can be prepared from one of eighty per cent. by taking one part of the latter and making it up to two parts by the addition of an equal quantity of diluent. It is not so generally realized that the same principle can be applied to all other dilutions. Thus a forty and one fourth per cent. solution can be prepared from one of seventy-nine and one half per cent. by taking 40.25 c. c. of the latter and adding sufficient diluent to make up to 79.5 c. c. In other words, an x per cent. solution can be prepared from a Y per cent. solution by taking X c. c. of the latter and diluting it sufficiently to make Y c. c.

Fractional dilutions are prepared similarly. Thus, for instance, a 1/97 dilution can be made from a 1/8 dilution by taking eight parts of the latter and making it up to ninety-seven parts. Or, a 1/X solution can be prepared from a 1/Y solution by taking Y c. c. of the latter and adding sufficient diluent to produce X c. c.

The author suggests that by these methods the medical man can not only calculate quickly, but even in his head, and much knitting of brows and sucking of pencils will be avoided.

Landouzy-Dejerine Type of Muscular Atrophy.—Gutmann and Kudelski (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* January 27, 1921) report the case of a man, aged forty-one years, who had had an unmistakable attack of lethargic encephalitis in 1916, though its exact nature was not known at the time. The pronounced fever was successively followed by somnolence in the daytime, diplopia, two weeks later by tingling and severe cervicoscapulobrachial pain, and six weeks later by amyotrophic changes. The case shows that a disease of the nerve centres themselves may lead to myopathic disorders, whereas hitherto amyotrophy has always been due to peripheral or nerve root involvement. The case exhibits the typical changes of the facioscapulohumeral or Landouzy-Dejerine type, with marked atrophy, pseudohypertrophy, and motor weakness of the extremities. On both sides of the body certain muscles escaped, in spite of involvement of others supplied by the same nerve. The muscular atrophy was at first progressive, later retrogressive, and had remained unchanged for the preceding three years. The interval between the acute attack and the myopathic disturbance was so long that the latter is considered to be best described as a sequel of the lethargic encephalitis.

Multiple Sclerosis and Localized Encephalitis.—Friedrich Schultze (*Deutsche Zeitschrift für Nervenheilkunde,* Vol. 65, Nos. 1-2. March, 1920) believes that in cases of progressive paralysis where sclerotic spinal cord foci have been found, changes in the brain cortex and in the spinal cord are produced by Spirochaeta pallida when the patient is infected with lues. Such small multiple foci are especially frequent in multiple sclerosis. If the Kuhn-Steiner spirochetes can be identified as the source of multiple sclerosis, or if some other irritative agent can be discovered, Schultze feels that much will have been accomplished toward the explanation of the condition.

The writer outlines the hypotheses of the etiology of multiple sclerosis and gives various reasons against Oppenheim's and P. Marie's views of infectious disease etiology. He then indicates the uncertainty of the prognosis, and finally describes a progressive encephalitis which on autopsy revealed just such multiple foci of sclerosis as were found in cases of lues. Since this disease was excluded the only explanation was that an acute or subacute multiple sclerosis had produced the encephalitis.

Compressive Trauma.—P. W. Nathan (*Surgery, Gynecology and Obstetrics,* January, 1921), from his investigation, concludes that:

Compressive injuries of the extremities must be distinguished as a special group of morbid conditions. Aside from the coincident or complicating conditions, they have a common etiological moment, a common pathology, and are likely to lead to analogous disabilities. Though the morbid conditions induced by the compressive force often involve the bone and may be complicated by wounds and suppuration, the changes in the soft parts are uniformly characteristic. As gunshot and particularly shell wounds are virtually compressive injuries (what is lost in duration and weight of missile is more than compensated for by the velocity) presenting the same morbid conditions and the same train of symptoms, these injuries must be included here.

The morbid condition induced by compressive injury is twofold: it consists of the direct injury to the tissue at the time the force is applied, and the additional injury caused by the increased tension within the tissue, the result of the extravasation of blood and the inflammatory exudate. The secondary compression, as it often involves the muscle and nerve fibres with their endorgans, tissues exceedingly sensitive to compression and irritation, often leads to disabilities entirely out of proportion to the damage produced by the original compressing force. As the damage to the neuromuscular and vascular apparatus is regional, depending upon the severity and the location of the impact, the clinical phenomena are usually not characteristic of a nerve trunk injury.

Ischemic paralysis is the most serious form of compressive injury. It is due to a combination of neuromuscular and vascular injury, and the morbid condition only differs from that caused by all compressive injuries, in its intensity and wider distribution. Ischemic paralysis is not necessarily caused by a constricting bandage; though such a bandage increases the tendency to this condition, the causative factor more often lies in the intensity of the exciting compressive trauma.

The coincidence of fracture, open or suppurating wounds, only slightly influences the effect of the compression; these complications increase the seriousness but do not alter the fundamental character of the morbid condition.

If gunshot injuries, fractures by direct violence, and all contusions (socalled) are characterized by the same morbid phenomena in the soft tissues, it is evident that the soft tissues will, if prolonged or permanent disabilities are to be avoided, require the same attention as the wound or the fracture. Moreover, as the morbid conditions described come on immediately or soon after the injury, the necessary treatment cannot be delayed until the fracture has been consolidated, suppuration has subsided, or the wound has closed. It must be instituted from the beginning.

Incomplete Valvular Stenosis as a Cause of Severe Stricture of the Esophagus.—Jean Guisez (*Bulletin de l'Académie de médecine,* January 11, 1921) finds that in some children with persistent disturbances of deglutition, hitherto termed spasm of the esophagus, the actual cause of the trouble is a valvelike formation in the esophagus near the cardia. The condition usually sets in upon attempts to swallow solid food, thereafter becoming gradually more intense. There is no pain nor vomiting, but copious salivation, sometimes troublesome at night, is a salient feature. X ray examination is negative because the stenosis is not so marked as to arrest a liquid bismuth meal, but esophagoscopy reveals the presence of a semilunar valve obstructing only half the esophageal lumen and located always at the diaphragmatic orifice, although the condition cannot be said to be a congenital stenosis. The mucous membrane in this region shows marked redness and thickening. All the author's patients had previously been treated by isolation and bromides without result. Aside from weakness and loss of weight due to inadequate nutrition, there were no nervous, hysterical, or other stigmata. The treatment of such cases consists in first reducing the esophagitis by a suitable liquid diet, withdrawal of milk—which clots above the stricture—and alkaline lavage of the esophagus, and thereafter in dilatation and local circular electrolysis, rarely supplemented by surgical liberation of the valve.

The Relation of Inbreeding to Tumor Production. XII.—Maud Slye (*Journal of Cancer Research,* January, 1920) reports her observations on mice, from which she concludes that inbreeding does not influence the increase or incidence of cancer, but that its real effect is to eliminate cancer by eliminating the strain. As a matter of fact, hybridization increases cancer by increasing the number of cancer progeny. As cancer is a tendency which segregates out, it is considered to be hereditary in nature, and not congenital. Slye states that the inheritability of cancer in mice has been proved and that therefore its inheritability in the human race or in other species in which it occurs is likewise demonstrated.

Frequency of Mild Forms of Gastrosuccorrhea.—L. Pron (*Bulletin de l'Académie de médecine,* January 11, 1921) asserts that continuous gastric hypersecretion is often overlooked, as it generally causes no more severe symptoms than simple hyperchlorhydria, or even remains latent or simulates hypochlorhydria. Among 120 cases of long standing gastric disturbance, with succussion splash and a minimum acidity of two grams, the mean acidity was 2.63 grams and the maximum 4.5 grams; the free hydrochloric acid ranged between 0.36 and 2.92 grams, with an average of 1.38 grams. Of these one hundred and twenty patients studied, only sixteen had had attacks of gastric pain and twenty-six, vomiting of food or acid. Fifty-eight experienced only moderate degrees of pain, burning sensations, epigastric constriction, or occasional nausea or regurgitation; in these, only a diagnosis of simple hyperchlorhydria had seemed warranted. In three, the symptoms were confined to an exaggerated appetite and sudden hunger sensations. In four, intestinal manifestations were the more important, consisting of constipation or mucous diarrhea and colicky pains. In five, all symptoms seemed to have subsided for several months. In eight, there were signs of hypochlorhydria, viz., reduced appetite and discomfort after meals, with complete absence of pain, burning and pyrosis. Thus, in two thirds of all cases of continuous hypersecretion, the acid catarrh escapes clinical notice, and the diagnosis can be made only by use of the stomach tube in the fasting stomach and analysis of the gastric contents. The manifestations of hyperchlorhydria in these cases are explained by the predominance of mechanical factors, such as delayed evacuation and atonic dilatation, over the chemical disturbances. The latent forms are accounted for by wear and tear and eventual loss of the irritability in the vicinity of the solar plexus.

Differential Diagnosis of Malarial Parasites in Thick Blood Smears.—J. Pratt-Johnson (*Journal of Tropical Medicine and Hygiene,* January 1, 1921) notes that in differentiating the type of malaria from examination of a thick film, difficulty may arise owing to the fact that only ring forms are present and the more typical stages of the parasites few in number. Under these circumstances differentiation by means of the ring forms alone is best effected on the basis of the following distinguishing features: In benign tertian rings, the ring is large and thin with a relatively small chromosome; the rings are of varying size; the chromosome is single; there is a fairly regular thickness of protoplasm; the ring is rarely a true circle, being usually irregular, and the staining of both protoplasm and chromosome is relatively faint. In malignant subtertian rings, on the other hand, the ring is small, with a relatively large chromosome; the rings are of uniform size; the double chromosome is more common; the signet form is common, and triangular or cone shapes are not uncommon, the protoplasm frequently appearing only slightly larger than the chromosome; the ring is frequently an actual, clear-cut circle, and staining tends to be more intense, especially as regards the chromosome element.

Frequency of Graves's Disease in Certain Districts of France.—Félix Regnault (*Bulletin de l'Académie de médecine,* February 8, 1921) asserts that the course followed by goitres differs according to the temperament of the inhabitants of the district concerned. In the Vivarais, a mountainous district of southern France, the transformation from simple to Basedow goitre seems to be particularly frequent. This is accounted for by the temperament of the inhabitants who, while frugal and sober, slow, patient, and conservative, are nevertheless nervous and show a tendency to violent acts. At the close of the eighteenth century these peasants still carried a gun to the church door. At present they indulge in violent religious quarrels and form independent sects. In Maurienne, a district of Savoy, in which goitre and cretinism are endemic in many townships, the author found no Basedow cases, but instead many instances of mild hypothyroidia, characterized by shortness of stature and a special type of facies. The low average stature in these districts seems to be dependent upon the large number of mild hypothyroid cases.

◆

Letters to the Editors.

HYSTERICAL ANTIVIVISECTION.

San Francisco, Cal., *March 17, 1921.*

To the Editor:

In the *Country Gentleman,* October 16, 1920, is an article by Albert Payson Terhune, entitled Vivisection.

Were it not for the fact that the *Country Gentleman* is an agricultural journal with a huge circulation, and ordinarily credited with good reading matter, we might ignore the irascible tirade of Mr. Terhune. However, as his article is such an unjust attack upon the medical profession, and goes to so many readers who will never hear or know the truth of the matter, it should be promptly dealt with by every medical journal in the United States.

Mr. Terhune either affects an ignorance or is ignorant to a pitiable extent in his attempt to speak of vivisection. He writes about the awful experiments in vivisection that are done by surgeons at their "clinics." He presumes not to know the difference between a surgical clinic and a research laboratory. Almost any man of ordinary intelligence ought to know that no animal, domestic or wild, would be tolerated in a surgical clinic today for sanitary and surgical reasons. Anyone of average intelligence knows that a surgical clinic is for the care of afflicted human beings and not a place for biological, pathological, physiological or bacteriological experiment.

Mr. Terhune mentions a puppy that is supposed to "have been tossed out of the clinic window to die." He further states: "Every torturing wound that can be inflicted on any creature—every torment that socalled human ingenuity can frame—had been wreaked on the luckless pup." That must have been a big pup. According to Mr. Terhune's further statements, only a few of which would make it certain that this "luckless pup" had "his lips sewed together, windpipe dissected out, and a large hole put through it and lifted, and a large nail passed across it from behind." He says, "Dupuytren used to cut the recurrent laryngeal tubes to make the beast dumb." (The recurrent laryngeal tubes are anatomical structures that exist only in Mr. Terhune's imagination. The recurrent laryngeal nerve is well known to surgery. It is also well known that to tamper with this nerve is, even without severing it, immediately dangerous to life.) To continue, this pup must have had his scalp dissected off, his skull opened, his brain cut and meddled with, his spinal cord laid bare and scratched with instruments, then beaten on the head to make him refrain from howling, although his windpipe had been put out of commission; his chest ripped open and heart manipulated, instruments plunged into his blood vessels; his abdomen widely opened, and boiling water poured on the bowels, and many other awful things perpetrated on and in his body.

Mr. Terhune mentions "a hundred or more operations that might be performed"; he says the dog had everything done to him, so he must have had a hundred things done to him at least. In spite of all this, by the kindly aid of an unskilled woman and some of her neighbors, this cut, scalded, mangled, dismembered pup recovered and had his picture taken, and some of his friends presented an enlarged photograph to Mr. Terhune. He does not say whether or not the lady and her neighbors used an anesthetic while they resurrected and reconstructed the pup.

He speaks about baking and boiling dogs for experimental purposes, and also makes the assertion that "criminals had been turned over to the surgeons for vivisection purposes." That gentleman ought to know that live human beings have never been submitted to the medical profession for purposes of vivisection. Such a thing is illegal and would subject any or all individuals participating in such an unheard of orgie to a long term of imprisonment for the crimes of mayhem or manslaughter.

He writes of the doings of Magendie, French physician and physiologist, born 1783 and died 1855; Dupuytren, born 1777, died 1835; Claude Bernard, born 1813, died 1878, and Sir Charles Bell, born 1774, died 1842. He represented these men as of the present time, and misrepresents them as having committed all the atrocities which have been evolved from the tormented imaginations of antivivisectionists.

He mentions as being opposed to vivisection, "Mark Twain, Bismarck, Henry Ward Beecher, John Bright, Luther Burbank, Thomas Carlyle, Gilbert Chesterton, William James, Cuvier, William Lloyd Garrison, W. D. Howells, Humboldt, Cardinal Manning, Henry Van Dyke, Stanley, General Sir Evelyn Wood, Lord Wolseley, Scott, Bernard Shaw, United States Senator Myers, and thousands of other great minds, among them innumerable famed surgeons and doctors." Of those whom he mentioned by name, none of them were medical men, and it is quite likely that not one of them ever visited a laboratory where vivisection is practised, and knew nothing about it except by hearsay. Many of them are dead and cannot express themselves as to the truth of his assertion. He does not mention who the "innumerable famed surgeons and doctors" are. That statement is on a par with his pup story.

The whole vicious article breathes of insincerity, evasion and misstatement, to say nothing of gross lack of information. It is evident that it is to mislead and not to instruct. He forgets to mention the ladies who stand on street corners wearing, for ornamental purposes only, the skins and feathers of unfortunate birds and animals, while these ladies besiege the population for aid to the cause of antivivisection. He seems to forget the farms where animals are grown to be knocked on the head and skinned to provide furs which are more or less useless adornments of our present day ladies. The carcases of these animals are wasted along with their lives. His whole article tends to bring down unmerited condemnation on the medical profession by accusing them of practicing unheard of brutality upon the lower animals as well as mankind. No sane human being would do otherwise than condemn the unspeakably unnecessary brutalities mentioned by Mr. Terhune, and which are not done in laboratories connected with medical schools or by members of the medical profession. Whatever he might dig up as done without anesthetics was before the days of anesthetics, when surgical operations were performed without anesthesia from force of circumstances.

The management of the *Country Gentleman* refused to print a review of Mr. Terhune's article. They stated that they were going to have "the other side" presented by some well known man in the medical profession. Quite recently they published a most excellent article by Dr. W. W. Keen, of Philadelphia. To be sure Dr. Keen's article was everything that it should be, coming from so great a surgeon and so great an authority. The incongruity of it was the pitting of what we might call anarchistic, pretended or congenital ignorance, supplemented by a total lack of regard for accuracy against one of the greatest and best informed men in the medical profession of the world. It would be regarded as most ridiculous to pick up a hoodlum and a blackguard and pit him against a master of theology in order to demonstrate both sides of a matter concerning religion or morals.

The writer has been informed that the *Country Gentleman* received about a thousand letters, ninety-five per cent. of which endorsed this scurrilous vaporing exhibited on the part of Mr. Terhune's article. This shows to what an extent public sympathy may be excited when appealed to through misstatement and prejudice.

The vicious misstatements, the publication of half truths and nontruths, are directed against the medical profession in a most unjust and uncalled for manner. If the medical profession does not take up the matter and fight for the good repute and welfare of its own members, it is certain that none of the popular magazines or daily newspapers are going to do it.

ETHAN H. SMITH.

701 PHELAN BUILDING.

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery.

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

New York, Wednesday, May 18, 1921.

Collectanea.

Disease on Board Ship.—The work of the Ministry of Health in England will soon include a consideration of the conditions of a seafaring life, the question of hygiene on board ship not being comparable with that on land. The main object on board ship is to carry on commerce, and nothing is to hinder that if the ordinary laws of health are obeyed.

That is what Dr. Arnold Chaplin says in the current number of the *Proceedings of the Royal Society of Medicine,* first of all drawing attention to the fallacy that the seaman has an unlimited supply of fresh air. The ship has plenty, except in the greater part of its internal accommodation, and however good the work of the naval architect, the sailor will try to keep out fresh air, having a horror of drafts.

The three minor infectious diseases likely to break out are mumps, chickenpox and measles, which strain isolation accommodation to the utmost. Enteric, smallpox and plague are much more difficult to manage at sea than on land. Pulmonary tuberculosis causes a high mortality and shows no diminution in its ravages; the tropics, subtropics and temperate zones appearing equally favorable.

Under the English Merchant Shipping Act, 120 cubic feet is allotted to each seaman, this space including fifteen superficial feet. Not much, but the largest ship is subjected to crowding unheard of on shore. The only space to be appropriated is that of the passengers, and to give the seaman an additional 120 feet would mean a lesser number, say 160 to 200, of passengers. In a cargo ship the only invadable space would be the holds, and this would mean a serious invasion of the money earning capacity.

A safe and efficient water supply is obtained by regarding its source, and the cleanliness of the filters.

For disinfection and fumigation, sulphur dioxide is usually employed, but experiments are now being carried on with hydrocyanic gas. The author favors formaldehyde solution and potassium permanganate when disinfection has to be done during the voyage. The whole question is still not satisfactorily solved, nor are those of the surgeon's accommodation for surgery and hospital cabins.

Ghostly Voices.—The voice of a desperately anxious seeker after truth still comes to us in the *Journal of the American Society for Psychical Research.* The number for this month has an article on Credulity and Truth by the late Professor Hyslop, pointing out that "the average man of the world is still bomb proof against spiritual realities, except as day dreams or fine emotions, but if you tell him the great Andromeda Nebula is approaching the solar system at the rate of 12,000 miles a minute, or that Altair is rushing there at the rate of 1,522 miles a minute, he would swallow the story without doubt or question. . . . If conceivability be the test of truth, a ghost has a thousand times the chance for credulity that the velocity of light or stars has." Hyslop points out that we are expected to believe in the existence of atoms, ions, and electrons, though no one has ever seen them. Herein are prejudice and ignorance. All that physical science says is accepted even when inconceivable, while conceivability is made the test of truth in psychic phenomena.

His paper on Question-begging Explanations demonstrates that plausible explanations of mental phenomena which pass for established fact do so because they are associated with current phrases in physiology which no one questions, but ones which a little examination will show to be pure imagination. The article is really a criticism of Sir William Barrett's *On the Threshold of the Unseen,* and will send many back to reread the work.

Dr. H. S. Garfield gives us a goodly crowd of Miscellaneous Incidents, telepathic, etc. It seems to him that the reliable communications come nearly unsought, while those urged are conflicting, inconclusive, and do not clear inconviction.

The Peculiar Experiences Connected with Noted Persons, edited by Walter F. Prince, are ghostly enough to please anyone, and are all authenticated. Some people will read them with greater interest because they are about noted people, even believing more strongly, but these, perhaps, are those who do not come truth seeking, but are only sensation hunters, and love to have a tale to repeat.

Light Giving Animals.—It has been discovered by Dr. E. Newton Harvey that the luminescence of at least three groups of animals (the beetles, *Pholas* and *Cypridina*) is due to the interaction of two substances, luciferin and luciferase, in the presence of water and oxygen. The latter is a protein substance which in many ways behaves like an enzyme, and, in the oxidation of luciferin in the formation of light, is used up in large quantities. In his monograph on *The Nature of Animal Light,* 1920, the author throws much light on the subject of bioluminescence.

New York Medical Journal
INCORPORATING THE
Philadelphia Medical Journal and the Medical News
A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 15. NEW YORK, WEDNESDAY, JUNE 1, 1921. WHOLE No. 2210.

Some Emotional Reactions in Epileptics*

By L. PIERCE CLARK, M. D.,
New York.

Perhaps in no other psychotic group do we find a more crude and shortlived affect than in the epileptic. Many observers are able to discern his egocentric makeup and supersensitive character, but do not readily note the essential poverty of his emotions. Yet hardly anyone who has actually lived with the epileptic can fail to be unaware of this trait. One might be inclined to believe that, because his emotional reactions are so intense and volatile, this would indicate the epileptic is really an emotional being *par excellence*. But it is not essentially these facts which mark the incidents as epileptic so much as the very superficial character of his affective reactions. If we assume an egocentric basis for the character, the natural correlative of a supersensitiveness is to be expected; perhaps these two traits are always concomitant of each other, and the latter is always in proportion to the crudity and dominance of the first in the makeup. Given these two defects in the instinctive life, it is easy to comprehend what the affective reactions of the individual shall be. The narcissistic concern of the epileptic limits the wide range of his affective life, and the very sensitivity of the individual limits the depth of emotional reaction that takes place.

For a long time it has been known that the emotional nature of the epileptic lacks detailed variety and richness, both in feeling and in expression. This has been ascribed to the deteriorating nature of the disorder itself, but careful inquiry will disclose that this defect is innate and a real part of the character long before the epilepsy as such has put in an appearance. To gain a comprehensive idea of the emotional defect in the epileptic, one should consider both the conscious and the unconscious motivation. The latter is summated in fantasies, transitory deliria and dreams. Usually only a cursory contact with the epileptic makes one feel their emotional inferiority as a class, and this is hardly secondary to any other group of neurotic or psychotic patients. This feeling is not engendered because of a defective intellectual endowment, although this is not an infrequent accompaniment of the total defect; it is really born out of the essential lack or poverty of his feelings and actions in everyday life. Just as the feebleminded suffer mental arrest intellectually, similarly we find a quantitative and qualitative defect in the instincts underlying the epileptic's emotional life. In the latter, however, these instincts are more frequently perverted than fully arrested. It is true the feebleminded also show emotional arrest, but not so signally in proportion to the intellectual deficit. It is the reverse, however, in the epileptic, so that while they are comparable in many ways as states of arrest in development, the epileptic is essentially defective in the emotional and affective field, while the primary fault of the feebleminded is intellectual, quantitatively and qualitatively.

Now that we have outlined the essential reasons for the existence of emotional poverty in the epileptic, let us see what the basic instinctive faults may be. In more intense analysis one finds the epileptic suffers from a defect of the adaptive instincts. This inadequacy is either recognized by the epileptic as such, or he tacitly admits it in his attitudes and acts. The egocentricity or self superiority which he develops is usually proportionately enlarged to meet this acknowledged or admitted maladaptive instinct. No narcissism in the neuroses equals it in amount or in the immobility of its psychic structure. It is the disparity between the biologic defects of adaptive instincts at the core of the epileptic personality and the assumed genuineness of his narcissistic self concern that cause such unfortunate social criticism. Usually the epileptic is blind to this incongruity and therefore makes no genuine effort to correct it. He strives to induce society to take him at his supposed selfvaluation. It refuses to do so. This increases and exaggerates his stress and annoyance, and attacks may follow. In minor degrees the same mechanism may hold true for many socalled normal individuals, and while it may be equally present in the personality of the latter, the socalled normal has many other qualities of character which enable him to fend off the consequences or mitigate defeat of his attempts to live in the world of reality. The epileptic lacks worldly humor and healthful resourcefulness in socially acceptable ways.

---

*Read before Ward's Island Medical Society, April 26, 1921.

Copyright, 1921, by A. R. Elliott Publishing Company.

At rare moments nearly all epileptics recognize their innate inadequacies, but, lacking a sense of healthful initiative, they can endure this selfcontemplation only for short periods. If selfanalysis is centred for any length of time the state is relieved only by fits. The epileptic is too sensitive and too serious in self contemplation to endure this direct facing of facts. The fit dulls the sensitivity and the epileptic is usually amnesic to the particular stressful episode, which is seemingly a protective mechanism to the undue sensitiveness. Nearly every epileptic at certain stages of his disorder (before marked deterioration has taken place) is susceptible of being played upon. By siding with his conscience and compelling him to view his helpless inadequacy one may increase his apprehension all the way to actual fears, and even attacks can be induced. The following is an instance:

A middleaged epileptic, who had a very intensive and lifelong conflict with his sexual life, believed his youthful sexual liberties had really induced his disorder. No amount of commonsense talks had been able to dislodge this belief from his mind. Steadily he built up a deep religious penance of Bible study and prayer to offset God's just infliction of his epilepsy. For long periods he had releases from his conscience, but on the occurrence of attacks he seemed always able to account for them either as a divine visitation of wrath for recent evil thoughts or for past transgressions not yet fully expiated. It was fairly easy to determine that this patient was on the point of having attacks by his intensified preoccupation in religious devotions. At such times one had but to side with his conscience and frankly confirm his suspicions and an attack would follow. This could be repeated until he was reduced to an enduring befogged state, and after a course of several days' rest he would return to his usual interparoxysmal quietude.

A second example is that of a man several years epileptic who had great difficulty in repressing his youthful sex fancies (both of these cases refer to sexual conflicts, although the epileptic's sexual life is perhaps the least elaborated of all the psychotics). As is common, his religious practices enabled him to cope with his desires. His whole social approach is that of the pietistic religious pedant, yet at times he seems incapable of deciding whether or not his disorder is a just infliction by God. When in this latter state one has but to tilt the weight of argument to the side of condemnation and an attack can be induced. In both cases the amnesic state which follows covers the whole painful conscience infliction, and the patient is thus saved from the recollection of what induced his attack. The mental content in the automatic state reveals what incited the attacks. Both cases have been greatly improved by rational sympathetic explanations of their sex life and their epileptic disorder. These therapeutic talks have to be undertaken with the greatest tact, and often interviews have to be opened and closed with expressions of praise and commendation.

What is the epileptic to do to help himself? One must encourage him steadily to take down his narcissistic wall of egoistic concern. First of all we must show him the best means for building up or rooting out the inferior instincts that breed a sense of inferiority. The narcissism in its more objectionable aspects can then be proportionately reduced and render his attitude toward the world less objectionable. Again, the childlike supervision required and lack of selfextrication from his dilemma shows the very infantility of the epileptic character. Over and over again he asks for help in the same childish manner as the infant trying to walk for the first time. His very lack of grit, initiative, resourcefulness and planning a way out prove how infantile is his inferiority. Perhaps this accounts in part for his innate reliance upon magic drugs, religious practices and dependence upon individuals acting in *loco parentis*. Not alone is he to be taught the right and genuine means of overcoming his innate inferiority, but how best he may live with that which may not be overcome—a certain degree of "making the best of a bad job" so that his conscience may not increase his sensitiveness and thus induce more pronounced symptoms of his disorder. It is absolutely necessary that he take a healthful unconcern in his epileptic reactions as such. They must be greatly disregarded or he will do but surface ploughing on the irritative fringes of his narcistic contacts with an unyielding reality. Once dehypnotized, as it were, from watching for seizures, he can give attention to the real issues of his inferior makeup and its pressing problems.

Not infrequently patients guard themselves from the more intense states of ecstasy which often provoke attacks owing to the extreme dramatic effect which stirring episodes produce. We shall see this mechanism exquisitely illustrated in the case we shall present in part. Almost invariably the states of elation leading up to attacks have a secondary accompaniment of indefinable fear or dread which seems to be induced by an incomplete surrender to the joy of the moment, in itself provocative of attacks. The evil effects of daydreaming and vain imaginings in their cramping limitations of the epileptic personality, is well shown in the instance which will be cited. If the epileptic strives to bring such longings into actual reality it naturally is to his advantage; thus the vague day dreams do not debauch the inner personality. The great fault in the narcistic epileptic is that he does not often find the pursuit of effort in itself of satisfaction. The goal must be attained at once or it lends no enduring appeal. The life process, the act of becoming, is not his aim. The malignancy of the sadistic impulse of the epileptic is exquisitely illustrated in our citation.

The patient of whom we shall give a verbatim account of his special dilemma is a middleaged man in active business. He contracted his grand mal epilepsy several years ago, soon after marriage. His first great conflict was against an older sister, who assumed the maternal charge of the family at the mother's death when our patient was a small child. When he became of age and ready to take up his life work, his sister urged him not to enter the firm run by other members of the family. Being unsuccessful in this, she insisted that he retire from the business at the time of his first attack. Her personality in many respects is very similar to our patient's, and they have always gotten on poorly together. He has never forgiven her for the depreciatory attitude she took toward him as well as a more than fancied desire to place her own husband in the patient's place should she secure the latter's retirement. Our patient believes that the older brother as head of the firm has also taken a rather toplofty attitude in the business management, and this has been another thorn in his flesh. The patient's wife is not able to curb her childlike concern over his health, and, mingled with her own devotional attentions to his welfare, there is a continued fussy solicitation for him to get over his disorder for her own peace of mind. The latter state threatens a happy union. In order to bring out some of our patient's main contentions and what he thinks about various issues that may have a bearing on his disorder, an inquiry was gone into. In spite of the fact that the epileptic usually is unaware of his innate inferiority and the gradual mental and physical deterioration, occasionally a case presents itself in which the epileptic is keenly aware of these changes. The following so uniquely gives a subjective account of the personality fault and its deterioration that it is worthy of the extended verbatim account which follows:

Q. In our previous talk you said the physical disorder [merycismus apparently caused by a peristalsis from ileocecal adhesions] produces a feeling of irritability, headache, and a heavy sensation about the eyes, which in turn make obstacles in the daily activities seem very irritating and insurmountable. These states of irritations were the ones which further sensitized the whole mind and paved the way for attacks? A. Yes, that's the way it works, in the main.

Q. What about the outlets and satisfactions obtained in your reading [Attic philosophers, tragic epics, etc.] and in hearing certain moving music? You said these were satisfying up to a certain point, but if pushed further they were then likely to be dangerous? A. Yes; if I am in a certain quiet mood they are satisfying, but if I am in a disturbed frame of mind these same things may be obnoxious and distasteful. The satisfying periods are decreasing in number, and have deteriorated. These pleasures are provoking factors to attacks of late years, and I am fearful of letting myself indulge in them. They produce a depressing mood and then pave the way to attacks. On account of this fear I indulge less freely in them, and even then let myself go still less. It is positively distasteful to me at times, owing to this underlying fear.

Q. What are the general effects of an attack, independent of their immediate physical and mental depressive influence? I mean upon this inner personality? [This patient has had but a dozen attacks in all the five years of his epileptic career.] A. The attacks are really dreaded because of their deteriorating influence upon my inner personality. Soon after the attacks began I lost a desire and even willingness to indulge in or hear anything of an idealistic character. This I know is quite independent of age and more adult experience. It is because the ideal has lost its appeal because of these attacks. It may also be due to the fact that some of the desires of life have been fulfilled during the past eight or ten years.

Q. You are quite sure that this deadness of the general resiliency of the personality is not due to a fulfilled desire? A. No, I know it is not that. The mind really is no longer responsive and receptive to this former appeal.

Q. Do you think the fault and lessened capacity could be ascribed to the awareness of what the attacks are supposed to do to the mind and personality (deterioration)? A. No, I have always known what the attacks did to my real personality independent of what I have learned from physicians and books.

Q. Independent of what you think about them, the attacks do something which you cannot exactly describe? A. No; it is really what I have knowledge of, and not what I think about it.

Q. Even if you were able to think differently, would it have a certain effect? A. I cannot think differently and do not think differently. But it would really make no difference; the actual effect would be unchanged.

Q. Do you mean to say that these indulgences in themselves really deaden the inner good feeling of the mind? A. Yes, these indulgences develop certain traits of character inimical to an open type of personality. They prevented my adapting myself excepting to certain types of people. Hence the general feeling of detachedness and loneliness that is present with me always, except at rare and infrequent moments. Occasionally I was able to throw off and break through; for instance, with a crowd at cards, and especially if they looked to me for amusement. Then I assumed a perfectly natural mood and became the spirit of the crowd. These states were so much better for me than musical and literary indulgences, as they had no depressing aftereffects. After a time I got so I could play both rôles at the same time, a state of rapport with my card companions and secret mental indulgences, simultaneously.

Q. Why didn't you keep up these good fellowship states in card playing? A. Well, when a man gets married he generally leads a different life. [Said smilingly. However, these card parties are still a bone of marital contention.] But, more seriously, it takes long associations with people before I am able to create the proper impression or be willing to let myself go in associating with them, especially the latter. They must have a very complete knowledge of my personality.

Q. Was this feeling of rapport with men friends only, and were you able to lose yourself completely? A. I never lose myself completely. I used to write impromptu verse and limericks and keep the whole table in a roar; but I was not flattered by it, nor was I able to lose myself completely even in these settings.

Q. What would be your best satisfaction in life? A. I can conceive of no occupation, business or otherwise, which would completely engross me. The nearest would be the type of occupation wherein I could have full material engrossment combined with proper financial results and the possibility and ability to do great creative work.

Q. Under such circumstances, could you lose yourself completely? A. [After a long sigh, expressing unfortunate finality.] No, I would not lose myself completely even then.

Q. How about creative literature and music? [The patient does both with considerable distinction.] A. I really wouldn't care to do either lest I'd have to lose myself completely.

Q. Is your inability inherent in the disqualifications of your personality and psyche, or is it that you won't let yourself be lost in the fullness of its expression? A. I depreciate its quality—or I realize it hasn't got the qualities that others' work might have. Therefore, it is innate in me, and I am not able to fully imagine as much and build the thing as I would like; my imagination takes me beyond that, but the capacity to express it in a way that would be completely pleasing to me I feel that I lack. If I want to write a poem or essay, it has to be short; I cannot long sustain it. Prose language has more appeal to me than poetry.

Q. Now, as regards the sister antagonism? [The sister has the epileptic temperament.] A. Regarding her spirit, it has been gradually reaching a point which I foresaw from the beginning would come about, whereas the satisfaction I derive is from the fact that she has gradually acquired a knowledge of her own act and suffers from it. Her mind appears to me to be undergoing a kind of "torture," to put it perhaps too strongly, as a result. I realize the attitudes that I take toward her would not be acceptable in Heaven; the spirit of mercy and also my own demands are at fault, and I am altogether bad in my attitude!

Q. How about the attitude of your brother? A. My brother is of a different temperament. At heart he is a better man than I. I realize the sacrifice my sister has made, but her sacrifices are apparent to her; she would hold them up, and in her heart she still has the desire to hold them up, although she doesn't resort to doing it. But if my brother did something, it is a thing of the past and he won't bother about it again; it has gone from his mind. He is easy to influence, and where I am not personally concerned I can at times influence him; he might show no visible signs of the effect upon him, but he will slowly adjust to it.

(I may say at this stage that I had set aright the matter of brotherly controversy about business and personal relations. I simply told the brother the truth—that innately our patient was his superior in many things, and should be treated at least with equal respect.)

Q. Couldn't I straighten out the sister, too? A. No, even if you told her the simple truth and she accepted it, it would be really contrary to her real nature and could do me no lasting good.

Q. How about your wife? A. She cannot change her nature; if she did it might help me as a patient, but it would really displease me as a loving husband. Her attitude flows out of the good and the bad that goes to make up her particular type of personality, and I would not lose the good to get the necessary relief.

Q. So far as the central core of your personality is concerned, is there any definite specific principle which we may adopt that would help us in future treatment? A. I should say it would be the ability to create something worth while. That applies also to the inventive mind. I am able to create small things of no particular value and do certain kinds of work. It is rather baffling to me, and my disability creates a state of loneliness and dissatisfaction. As time goes on I do not succeed in overcoming it. I haven't the ability to create—I am not a "born genius." While I can conceive of it imaginatively, I think it would be better for me not to imagine it if I can't bring it to fruition, so far as my nervous health is concerned. I am quite certain that any efforts to bring my imaginings into reality would not prove effective. It is just as bad one way or the other to try to repress it as well as to try to express it. That is the general feeling of my mind. Unconsciously I think as we grow older we realize that we have reached the point where our efforts will be useless either way.

The foregoing interview is rather remarkable as showing the keen appreciation which an epileptic may have, not only that his memory is failing, which is a common enough statement for epileptics to make, but that the innate mental powers are deteriorating both because of and in spite of attacks. It may be noted also that indulgences in egoistic interests of a very satisfying sort are on the whole, in their use to extreme, very harmful. The inability for such individuals to lose themselves in objectivated existence is the real bane of the epileptic, first because the world's activities do not contribute all he desires, and, secondly, because he really does not want to give himself to such interest and love, as he much prefers to love and worship himself or his narcissistic ideals or fiction (Adler). Finally, it is interesting to see he is rather unwilling to name the exact condition upon which he would be willing to make such self surrender, lest he might be obliged to accept workable terms. In other words, he prefers his disease and all it entails rather than get well by the route of sacrifice of his egoistic desires.

We have here, then, a very discouraging state of affairs. We have a patient with the epileptic personality breaking into frank seizures because of the stress of his marriage plus a digestive difficulty, which latter has both toxic and somatic incitors as well as secondarily induced inciting psychogenic stress. The continued harassment of his emotional life was first extended to three members of his family, now happily reduced to two. Because of the sister's coming to a "just judgment" and continued punishment in consequence, this is growing to be a negligible factor to our patient. But the wife is an increasing irritation, and all efforts to remove it are as yet unavailing. We have done all we may with the patient himself in adaptation. Here, as elsewhere, we only urge the patient to expand so much of his narcistic engrossment as will enable him to get on with his environment. We find ourselves balked in attempts to have him realize intensive and compelling interests so we may fortify him against the vicious inroads of psychic and somatic causes for attacks. All through the arrest period the somatic factors and life interests were apparently safely adjusted. But here (six months ago) his life compensations failed and he had three attacks, since which we have been marking time and searching for new ways out of the complicated soul drama.

Now that the critical neuropathologist has largely given over his inquiry of determining the physical substratum of mental deterioration of senility as well as that of the epileptic, it becomes doubly necessary and important that we should pursue more earnestly our psychologic studies of the causes for mental deterioration. Given the makeup and the episodic seizure, the latter acting both as the extreme gestures of such a personality as well as a morbid protection from undue life stresses imposed upon such a weak organism, it is comprehensible that mental deterioration should invariably follow in enduring epilepsy. The mental grasp upon the realities of life, never very secure, so easily and frequently relinquished in attacks, limits mental development and readily breaks down that which has been attained. The primary fault is in the emotional realm. Our patients lose initiation and flexibility of mental adaptability. The thought has power but it is crippled, circumstantial and pedantic, as has been so well stated by MacCurdy (1). If this psychic process is beyond microscopic study and no physical remedy can reach it, the psychologic approach in diagnosis of the fault and its suggested therapy along such lines are of paramount importance. The results along these lines have been rather thoroughly covered in other specific papers upon this aspect of the epileptic problem (2).

REFERENCES.

1. MacCurdy, John T.: A Clinical Study of Epileptic Deterioration, *Psych. Bull.*, April, 1916.

2. Clark: A Study of Certain Aspects of Epilepsy Compared with the Emotional Life and Impulsive Movements of the Infant, *Interstate Medical Journal,* October, 1915. Treatment of the Epileptic, Based on a Study of the Fundamental Makeup, *Journal A. M. A.,* February 9, 1918. The True Epileptic, *Philadelphia Medical Journal,* May 4, 1918.

Singultus

By HARRY SCHULTZ DE BRUN, M. D.,
New York.

A symptom which has been sadly neglected in the practice of medicine, and one which physicians have passed over without determining the absolute cause, is singultus or hiccough. It is only in the past two years that any attention whatsoever has been paid to the very alarming condition, and this is probably due to the fact that many fatalities have occurred without an inkling as to the origin.

We understand singultus to be a reflex irritation of a complex nature with afferent impulses to the respiratory centre and efferent impulses carried through the phrenics to the diaphragm. Hence there is a clonic spasm of that muscle causing a sudden inspiratory movement with rapid closure of the glottis through the stimulation of the laryngeal filaments of the vagi. The peculiar hic sound is caused by the sudden closure of the glottis, preventing the inrush of air into the vacuum formed by the quick descent of the diaphragm. This irritation is usually caused by an inflammatory process of the structures supplied by the phrenics or pneumogastrics, but Ochsner (1) reports its occurrence without such findings at post mortem. He states that deaths have occurred from singultus alone.

CLASSIFICATION.

The various types of singultus may be grouped according to the causative factors. Seven distinct types are demonstrable, namely:

Simple.—A type caused usually by a sudden exit from a warm atmosphere to one of a cold atmosphere. The sudden chilling of the feet and hands. The taking of a cold plunge or shower. The drinking of a cold potion or cold carbonated waters. In this type the singultus is just momentary, lasting usually not more than three to five minutes even without treatment. The interval is usually less than fifty seconds.

Inflammatory.—A type which comes on after the onset of such inflammatory diseases of the abdominal organs as gastritis, appendicitis, enterocolitis, suppurative hepatitis, period of discharge, pancreatitis, strangulated hernias, and in any condition causing a high temperature which produces a general congestion of the viscera. In relapsing fever and typhoid and cholera, singultus is a very trying symptom, as it persists night and day until the temperature has dropped. It is usually a fatal sign in septicemia and septopyemia. It is rare in pyemia, according to Pepper (2). In phrenic neuritis from exposure to cold and wet, or multiple neuritis involving the origin of the phrenics, that is, the third, fourth and fifth cervical nerves, an obstinate singultus can ensue. During the influenza epidemic persistent and obstinate hiccoughs were reported. It was found in the majority of these cases that there was a marked congestion of the upper respiratory tract as well as an inflammation of the bronchi, and that as soon as this inflammation had subsided the attacks of singultus disappeared. It has also been seen in pericarditis, in which case it is a significant symptom, death usually ensuing. In meningitis and diseases of the spinal cord and spine there have appeared fatal attacks of hiccough; this, however, is a terminal symptom, coming on just before death. In acute appendicitis (perforative gangrenous) followed by collapse without reaction, or in general peritonitis, the onset of hiccough is a bad omen. In this type the singultus is more persistent, lasting from an hour to several weeks, and frequently being a terminal symptom.

Irritative.—This class is usually of a transitory nature when it is brought on by a simple acute indigestion or dilatation of the stomach. It is frequently seen after the ingestion of foods of high or low temperature or very spicy foods. In infants it is usually caused by swallowing air with a resulting dilatation. Dr. T. Sanders, of this city, cited me a case where the patient had severe attacks of singultus coming on usually after the ingestion of spirits of nitre, and as soon as the medication was discontinued the symptom ceased. The condition is most common in the gastrointestinal irritations, and it is especially severe in intestinal obstruction. In the early stages of coryza there is a marked tendency to swallow the secretions, and a hiccough ensues. This is especially true of young children. When tenia are present in the gastrointestinal tract, we often have transitory attacks of singultus, and they usually become more persistent when the common anthelmintics have been administered, this probably being due to an accompanying gastric irritation. It is an alarming symptom in post-operative conditions, and especially when there has been manipulation of the upper abdominal region, causing a reflex irritation of the phrenics and pneumogastrics through an existing inflammation of the viscera supplied by these nerves.

Singultus may also be caused by pressure irritation. It has been demonstrated in apoplexy, brain tumors and epilepsy. In the first two the symptom is usually an unfavorable sign. It also occurs in abdominal and chest tumors when there is pressure upon the phrenics at the point of origin or along its course. In women with goitres which become larger at the menstrual period there has been seen attacks of hiccough with cough, aphonia and dyspnea, being caused by pressure on the recurrent laryngeal nerve and on the trachea. This persists until the gland has returned to its normal size. Esophageal tumors and irritations have also been the cause of persistent hiccough. Ochsner (3) reports that hiccough occurs in stricture of the esophagus together with spasm of the muscles of the pharynx and diaphragm. He also asserts that there is danger of exciting fatal symptoms by intra-esophageal electricity. Chest tumors have caused very distressing symptoms of hiccough, according to Munro (4). When the condition comes on in carcinoma of the stomach (pyloric), I am of the opinion that the symptom is due to the accompanying dilatation of the viscera. In empyema the symptom, to my mind, is caused solely by an irritation.

Traumatic.—Hiccough was a frequent symptom seen in the practice of war surgery. I have had occasion to attempt to arrest the exhausting manifestation in gunshot wounds of the neck, chest (traumatic hemothorax), and upper abdomen (perforation of diaphragm), where the pneumogastrics or phrenics have been injured directly, or the tissue supplied by these nerves, causing an inflammatory process to ensue. If the injury has been amenable to surgical treatment, the hiccough usually disappears, and it also does happen that Nature is a good surgeon.

Specific.—In such diseases as uremia in chronic nephritis, when urates and urea begins to diminish rapidly in the urine and uric acid and cholesterin rapidly begin to increase in the blood, one very frequently is surprised to find the onset of an obstinate hiccough which fluctuates with the increase or decrease of the chemical blood constituents. Its occurrence is of a grave significance. Singultus is also found in well advanced cases of malaria, gout, diabetes, and acute rheumatic fever, the origin of which is quite obscure. To my mind it is caused by a general congestion of organs supplied by the pneumogastrics or phrenics.

Neurotic.—A hysterical singultus usually attacks a person who is mentally inferior. It frequently comes on when a patient attempts to make an intolerable situation tolerable; for instance, a young girl who has been asked to explain a disagreeable situation is suddenly seized with a severe headache and frequent hiccough, so that talking is difficult. Or, in another person who does not relish eating a certain food, a hiccough will suddenly develop until that course has been finished. Singultus is also seen in cases of epilepsy and hysteria. I have seen business men of nervous natures who, when worried over affairs, would develop obstinate hiccough from some unknown reason. The symptom in people with a neurotic trend is seldom fatal, and much experimentation as to its origin has accomplished very little.

Unknown origin.—One really could place many of the causes described above under this class, for the whole subject of singultus is more or less obscure. There are two conditions, however, which I am unable to place in the above classification, namely the hiccough coming on in bronchial asthma and that coming on with a terminal arteriosclerosis. In asthma the symptom has an irregular onset coming on at intervals of absolute quiet as well as in extremely violent attacks in the same patient. Unquestionably the congestion of the respiratory tract plays an important part in the production of singultus in asthma. In cardiosclerosis when one has pulsus alternans and a Cheyne-Stokes respiration the hiccough is frequent and usually a fatal sign and the patient rarely survives that day. During the stage of apnea the spasms are more numerous but less intense. In shock, hiccough is an occasional complication especially when there has been an internal injury to abdominal or thoracic viscera.

SYMPTOMS.

The hic or spasmodic closure of the glottis usually comes on every ten to sixteen seconds and in this way makes it possible for the patient to breathe comfortably. It is rare that the spasms become more numerous and if they do the prognosis is grave due to the rapid onset of exhaustion. Hiccough may be present in the simple type for a minute up to several months. There may or may not be a let up during the night.

In hiccough of short duration or of the simple type no symptoms outside of the hic are present, but should the attack last for several hours we get the signs and symptoms of the causative factor plus a soreness and pain over the epigastrium and lower chest. We then have a sense of pain in the throat with dryness and extreme thirst. Headache then comes on and gradually becomes severe. There is a rapid weak pulse and vomiting. As the condition continues the patient becomes nervous and worried and has fear of impending death, and gradually he becomes exhausted and either falls asleep and wakes up refreshed or he passes to a coma after a high temperature and delirium, and dies.

TREATMENT.

Due to the fact that most clinicians are not called in to see patients with singultus before they are *in extremis* the cases have been treated with reference to the subjective signs causing the exhaustion and not the causative factor. To my mind this is a great mistake, for no time must be lost in the removal of the probable cause. When the actual diagnosis is obscure it is then the duty of the physician to relieve the symptoms without delay. To those who have tried to allay the condition in a series of cases it is well known that no two cases can be treated alike. Sometimes the most simple manipulations or medications will stop a most distressing hiccough. The treatment is classified as physiomechanical and medicinal.

The simple type requires no treatment in the majority of cases but should it persist over five minutes the following physiomechanical methods may be tried. 1. Tongue traction for two minutes. 2. Holding the breath and counting. 3. The blowing of a wind instrument such as a bugle, flute or cornet. 4. Galvanism applied to the neck. 5. Lowering of the head and rectal stretching. 6. A sudden shock by taking patient unawares. 7. Sipping of water, hot or cold or ice. 8. Pressure in the neck over the fifth cervical. 9. Tickle the throat (vomit) and tickle nose (sneeze). 10. Throw head back and fingers in both ears and swallow water (vagi depressors). 11. Gargle with a bitter solution. 12. Drink lemon juice and salt. 13. Have the patient inhale amyl nitrite. 14. Mustard plaster applied to the epigastrium. 15. Ice bag or ethyl chloride spray to the epigastrium. 16. Stand on hands or head. 17. The flexion of the legs on the thighs and thighs on the abdomen. 18. Compress the supraorbital nerves. 19. Compress the epigastrium with ice. 20. Actual cautery to the abdomen. 21. Arms stretched up vertical, open mouth wide and extend tongue. 22. Pass a stomach tube or an esophageal bougie. 23. Should these simple methods fail a few whiffs of chloroform will usually stop any simple persistent hiccough.

In hiccough caused by inflammatory processes the disease should be treated above all and then the hiccough should be attacked by the elimination of toxins through gastric lavage with bicarbonate of soda, soap suds, enemas, purges, emetics, as apomorphine or ipecac. Where the temperature is high antipyretics may be used. Depressants are also efficacious if the patient's condition warrants their use. Hot water bottle to the epigastrium often gives relief to the sense of pressure and pain. In the severe inflammatory diseases as peritonitis, pancreatitis, typhoid, strangulated hernias, ileus and hepatitis, opiates should be administered early. In cholera, morphine and chloroform inhalations relieve the symptoms. In relapsing fever, morphine with atropine and chloroform inhalation or internally seem to give temporary relief. In phrenic and multiple neuritis counterirritation and large doses of salicylates should be used. In septicemia and septopyemia, morphine and atropine give temporary relief.

In the late influenza endemic there were reported many cases of persistent hiccough and by far the best treatment is the spraying of the nose and throat with a solution of cocaine with adrenalin as suggested to me by Dr. Theodore Sanders of this city. This treatment, together with hot applications to the epigastrium and small doses of atropine, have proved very successful in my practice. In the treatment of irritative singultus, one should always remove the cause if possible, hence if we take the most common cause, namely acute dilatation of the stomach or indigestion or acute gastritis, the physician should utilize all methods to throw out the irritant. This by means of purges, emetics, and enemas. The pain is allayed by means of hot water bottles to the epigastrium. When the vomiting, if present, has ceased and the patient feels nauseated you may give him a powder consisting of cocaine thirty-two thousandth gram, anesthesin thirty-five hundredth gram, medinol fifteen hundredth gram or have the patient suck on ice pellets. When these treatments have been carried out and the singultus persists, the physiomechanical methods mentioned above may be tried, and if they are not successful the following drugs may be used: Opium in the form of the camphorated tincture, four grams, or any alkaline mixture or atropine alone or with morphine. If used alone it must be pushed until the physiological effect is seen (i. e. dilated pupils, flushed face and dryness of the mouth). Bromides, chloral, cocaine, cannabis indica, ergot, creosote, valeriana, salicylates, sulphonal, antipyrine, acetanilide, asafetida, citric acid, acetic acid, bismuth, bicarbonate of soda, mercury, Hoffmann's anodyne, ether or chloroform by mouth, iodoform thirty-two thousandth gram, ipecac, nitroglycerine, pilocarpine, quinine, capsicum, spirits of camphor and musk.

There are many patients who have continuous attacks of hiccoughs following indigestion: the diets of these patients must be regulated, their bowels kept open freely and they must get a great deal of open air exercise. It is wise to put them on a tonic treatment such as iron, quinine and strychnine.

When children are in the habit of swallowing nasal secretions followed by hiccough, they should have regular nasal douches twice a day and the tonsils and adenoids removed if they are hypertrophied.

In postoperative conditions when there is an obstinate singultus it is good practice to keep the patient under opiates. Also the application of heat to the lower chest and upper abdomen, together with the flexion of the thighs and legs, if the condition permits, is beneficial.

In apoplexy and brain tumors medication is of little value. Some temporary relief, however, is given by the inhalation of chloroform and hot applications to the epigastrium. In epilepsy, amyl nitrite and tongue traction is of great benefit.

Whenever a surgical condition is present, and the condition of the patient permits, the knife should be the method of choice in treatment.

In traumatic hiccough the symptom should be treated after the operative procedure has been completed. Opiates are the medications of choice.

Where we are dealing with specific diseases, such as chronic nephritis, malaria, gout, diabetes and rheumatism, the various organs involved must be assisted in performing their functions without extra strain. The bowels are to be moved freely every day, the diet should be regulated, hyperacidity should be combated with alkalis. Iodides, bromides and chloral are useful drugs. Quinine should be pushed in malaria, salicylates in rheumatism. Besides these measures it is wise to resort to the physiomechanical means in treating obstinate singultus in these diseases.

In the neurotic and hysterical types, where almost every mechanical and medicinal treatment has been attempted, I have never seen a failure in stopping a true hysterical hiccough with the inhalation of chloroform while the patient was being held down. The other physiomechanical and medicinal methods are more temporary than the chloroform. Hypnotism is also a valuable method of treatment of hysterical hiccough.

Singultus in bronchial asthma is amenable to the adrenalin treatment, and morphine is a valuable adjuvant if necessary. A priesnitz to the chest and a hot water bottle to the epigastrium is beneficial. In arteriosclerosis the iodides and bromides relieve the symptoms if pushed.

REPORT OF AN OBSTINATE CASE.

Case.—Patient E. O., a business executive, whose mind rested rarely and who has lived a sedentary life for many years, was seen by me on January 31, after he had suffered intensely from hiccough for five days and nights, no medication having given him relief.

The patient was a moderate drinker of spirituous liquor, but drank excessively at times. Smoked cigars and cigarettes moderately. He was fond of very hot foods and very cold drinks. His bowels were not regular; required cathartics; micturition regular. The family history is irrelevant. The patient had measles and diphtheria in childhood, but no complications. Malaria at twenty-four without recurrence. Furunculosis at thirty-five. At forty-one he had three attacks of left renal colic with four day intervals. An x ray was taken and a stone seen. The attacks, however, passed off, and he had no further trouble until three months ago, when an attack came on again, lasting four days. At this time the x ray was negative. During these attacks the urine would contain red blood cells and albumin, but no casts. The patient had had chronic gastritis for many years and suffered from gaseous eructations and distress about twenty minutes after meals. There had been no blood in the stool or stomach contents. There was no history of lues or Neisserian infection.

The hiccough came on five days ago (January 26, 1920), in the morning, without apparent cause. It lasted ten minutes, and then ceased for about three minutes and began again. There were some periods of quiet lasting from three to ten minutes, but in the afternoon the attacks were so violent and the hiccough so frequent that the patient was forced to leave his office. An hour later he took a cold drink, and about two hours later he vomited a greenish liquid, which gave him relief from the hiccough for two hours. He ate dinner, but immediately after the attack was renewed and kept up throughout the night. He slept for an hour and a half, but the hiccough persisted in sleep. There were periods of five to ten minutes when there was no spasm. In the morning he was extremely weak, and complained of a headache and pain over the epigastrium. A physician was called in, and he found the patient in such a restless state that he resorted to injections of morphine. This gave the patient about two hours relief out of twenty-four. The attending physician reported that, physically, nothing abnormal was found. The following morning the hiccough still persisted and the patient was still weaker, and the family physician called Dr. Mahr, a neurologist. On examination the nerve status was absolutely negative, and the examining physician ruled out any hysterical trace. During these three days the patient had been put on alkaline mixtures (no relief), cerium oxalate (no relief), atropine until the physiological effect was seen (no relief), diluted hydrochloric acid gave relief for an hour, but when repeated no effect was seen. Sodium bromide, two grams, with chloral, nine tenths gram, every three hours (no relief). Morphine was again used and the relief obtained was only momentary. The patient grew gradually worse, and became so weak that he could hardly stand. At this point I was called in as the family physician was desirous of ruling out an acute surgical abdomen. On examination I found the patient in a critical condition. The spasms came on every twelve seconds, and his face was pinched and had a decidedly worried look. The eyes were puffy, his breath had an aromatic odor, the pupils were dilated with atropine, the conjunctivæ, throat and larynx were markedly congested. The chest showed nothing abnormal, the epigastrium was markedly tender and was somewhat rigid, the lower abdomen was normal, as were all other findings. The blood pressure registered systolic 122, diastolic, 68. Urine indicated a congestion of the kidneys. The blood count showed hemoglobin 90 per cent., red blood cells 4,800,000, white blood cells 9,000, with 68 per cent. polymorphonuclears, 31 per cent. lymphocytes and 1 per cent. eosinophiles. The feces showed nothing abnormal. Gastric analysis, hydrochloric acid, 50; total, 80; no blood lactic acid or bacteria. Rectal examination indicated a congested mucous membrane, and there was considerable pain on digital examination.

My first treatment consisted of a gastric lavage, high colonic irrigation, traction of the tongue with the head low and the inhalations of amyl nitrite. There was immediate relief, but it only lasted for an hour. Further amyl nitrite was unsuccessful in stopping the hiccough. Rectal stretching relieved the spasm for two hours, but it then began again and more intensive. The stomach was again emptied and an alkaline mixture run in and pressure applied over the phrenics in the neck over the fifth vertebræ. This caused the spasms to be less frequent, and after the injection of a quarter grain of morphine the spasm ceased for six hours. At three in the afternoon on the sixth day the spasms became so severe that I was forced to resort to inhalations of chloroform. The patient was kept under chloroform for three minutes, and there was no recurrence of spasms. The patient was now in a very nervous and weak state, and after taking liquid nourishment he slept for eight hours without interruption.

To my mind this case was one of true cardiospasm caused by a gastric congestion with perhaps minute punctate ulcerations near the cardia. At a later consultation Dr. Evan Evans corroborated my diagnosis. The patient was then put on a ulcer diet, and was given Fowler's solution with strychnine to regain the lost strength and weight.

Some weeks later I had taken a gastrointestinal x ray series, but no defects or abnormalities were perceived. On examining the patient June 1st this year he had gained weight and strength and felt like a new man. He was advised by me to get more outdoor exercise, and after taking up golf he professes to have gained ten years in life.

CONCLUSIONS.

1. Singultus has been known to be the sole cause of death.
2. The symptoms may be classified as to cause: a, Simple; b, inflammatory; c, irritative; d, traumatic; e, specific; f, neurotic; g, unknown origin.
3. Attacks last from one minute to several months, with or without spasms, during sleep, and with or without remissions.
4. If the condition of the patient permits, always treat the causative factor when found.
5. If physiomechanical and medicinal treatment fails, resort to narcotics and anesthetics.

REFERENCES.

1. Ochsner: *Surgical Diagnosis and Treatment,* vol. i, p. 157.
2. Pepper: *System of Medicine,* vol. i, p. 975.
3. Ochsner: *Surgical Diagnosis and Treatment,* vol. i, p. 420.
4. Munro: *Manual of Medicine,* p. 855.

884 West End Avenue.

Report of Case of Hysterical Aphagia

By ANTHONY A. RUTZ, M. D.,
Brooklyn, N. Y.

Minor disturbances of deglutition are common manifestations of hysteria. Aphagia or complete inability to perform the act of deglutition, more or less permanent in character and of such a degree as to jeopardize the life of the patient is, however, rare. It is for this reason and on account of certain other interesting features that the writer presents a report of the following case.

Case.—The patient was a female, forty-eight years of age, married, and, prior to her marriage, a public school teacher by profession. In her habits there was nothing of special interest, except that she was unusually sympathetic, devoting much of her time and thought to the welfare of others. In her family history, we note, that her father died from an ulcer of the stomach. Her mother is living and well. Two sisters have gastrointestinal disturbances and are of a neurotic temperament. There is no history of cancer, tuberculosis or insanity. In her past history we find that fifteen years ago she suffered from malaria, and ten years ago from typhoid fever. She has never had diphtheria, nor has she ever had any form of paralysis. Her menstrual periods have become protracted. Her operative history is negative.

Her present history dates back to childhood. She has always been of a neurotic temperament and has suffered from gastrointestinal disturbances. Her nervous symptoms consisted of irritability and emotional attacks of crying and laughing. These, in later life, were frequently followed by mental and physical prostration, necessitating rest in bed for several weeks. At various times she suffered from severe pains in the back of the neck and numbness and pain in different parts of the body. There was also insomnia and impairment of memory. Her gastrointestinal symptoms consisted of constant belching and bloating, occasional sour eructations, and periodical attacks of headache and vomiting. She has been free from abdominal pain, has always been constipated, and frequently has observed mucus and shreds in the feces. An excessive secretion of saliva has been an annoying symptom.

Fourteen years ago the patient saved a child from possible fatal strangulation as the result of a morsel of food entering the trachea. This incident impressed itself so firmly upon the patient's mind that from then on she suffered from a constant fear of choking during her meals. At times this fear became so strong that it interfered with her deglutition. These disturbances of deglutition were always slight and transitory in character. They consisted of sudden regurgitation of food from the esophagus, occasional coughing and choking, and the entrance of food into her nares. For the last few years she has had more or less cough with expectoration. Her chief complaint was the constant belching, for which she desired to undergo a serial examination.

The result of the physical examination made at the time when the above history was taken was, briefly, as follows: The patient was fairly nourished, moderately anemic and sallow. There was no hypertrophy of the thyroid or superficial lymphatic glands. The pupils were dilated, equal and reacted to light and accommodation. The tongue was coated and a tremor present. The gag reflex was normal. Examination of the heart and lungs was negative, except for a few coarse râles at the bases of both lungs. The abdomen showed the measurements of a moderate degree of status enteropticus. The liver and spleen were normal to percussion and palpation. The right kidney was palpable for its greater part. There was tenderness over the cecum and ascending colon. The lower border of the stomach in the recumbent position was two inches below the umbilicus. The patellar reflexes were exaggerated. There was no paralysis or loss of sensation. The pulse, temperature and blood pressure were normal. The history and physical signs are clearly those of a case of congenital ptosis of moderate severity associated with a neuropathic state and functional disturbance of the gastrointestinal tract. These are due to a derangement of the autonomic nervous system, usually a vagotonia resulting from the toxemia produced by the intestinal stasis, which develop in such patients to a greater or less degree. The marked influence which emotion can have upon such patients will be seen in the following paragraphs:

Nine days later a test breakfast was given. A number twenty-three French stomach tube was introduced and the contents removed without difficulty. Analysis showed a normal gastric secretion. Examination of the urine at this time was negative, except for an excess of indican. The feces, after a Schmidtt's test diet, showed a large amount of mucus and shreds and a few undigested starch cells. Examination of the sputum was negative for tubercle bacilli. At this time there was no impairment of deglutition. On the following day a test dinner was given to determine gastric motility. A number twenty-three French stomach tube was introduced without difficulty. Aspiration was impossible and inflation showed that the tube was not in the stomach. The tube was removed and again inserted, but with the same result. Then it was noticed that a hissing sound was produced in the tube during the respiratory movements. From this it was evident that the tube was not in the esophagus, but in the trachea. The tube was removed and the patient was asked to swallow. This was impossible. She could not raise her larynx. Further examination showed that there was complete anesthesia of the pharynx and larynx. The gag reflex was absent, and the insertion of the tube into the trachea did not cause a reflex cough or any discomfort to the patient. The test was then deferred for some future time. The difficulty of deglutition was at that time considered temporary and unimportant, and attributed to the patient's nervous condition, as she had looked forward to the procedure with considerable apprehension.

Six days later the writer was suddenly called to the patient's home, as her condition had assumed a more serious phase. She was found seated in bed suffering from considerable dyspnea and cyanosis, and imbued with the idea that her dyspnea was due to distention of her stomach, and was belching large quantities of air. Examination of the abdomen did not show any undue distention of the stomach. Examination of the chest showed a large number of coarse râles over both lungs. There was little or no change in percussion. The physical signs in the chest were like those of pulmonary edema. The temperature was 101° F., pulse 130, and respiration 36. The patient was given water to swallow. No deglutition sounds could be heard at the ensiform cartilage, but the cyanosis, dyspnea and physical signs in the chest increased. The cause, nature and seriousness of the patient's condition was at once apparent. The disturbance of deglutition observed at the former examination had persisted, so that her food was entering the trachea, thereby interfering with respiration, and subjecting the patient to the imminent danger of pulmonary infection.

For the purpose of proper alimentation and closer observation the patient was sent to the hospital. There rectal feeding was employed, but later the patient was fed through a stomach tube. At first, on account of the spasm at the entrance of the esophagus and patency of glottis, repeated attempts to pass a tube into the stomach failed. Later, when a larger and stiffer tube was introduced, this was accomplished without difficulty. To control the excessive secretion of saliva, which was constantly entering the trachea, at first atropine was given hypodermically; later the same effect was produced by tincture of belladonna given by rectum. To diminish the danger of pulmonary infection, creosote was given by inhalation, and the mouth and pharynx were kept as free from bacteria as possible by antiseptic solutions. For their psychical effect, electricity and other forms of suggestion were employed.

During this time further observations were made. For the first three weeks all solids and liquids given by mouth for diagnostic purposes entered the trachea. At various times sterile water colored with blue litmus was given. This the patient would cause to disappear without difficulty. There was no elevation of the larynx and the deglutition sounds were not present. No reflex cough was produced, but such procedure would invariably increase the dyspnea and physical sounds in the chest. After a variable length of time the patient would eject by coughing all that was taken. Upon one occasion six ounces of custard were given. This the patient apparently swallowed with ease. Then in twenty minutes the patient began to cough, and in the course of three or four hours expelled in this manner, unchanged, all the custard which had been taken. During these three weeks there was complete aphagia. The patient, as it were, swallowed all her food into her lungs rather than into her stomach. The tactile sensation of the pharynx and larynx was lost. The sensations of taste, pain, heat and cold were present, but diminished. The corneal reflexes of both sides were absent. The patellar reflexes were exaggerated. There was no impairment of motion or sensation in any other part of the body. The pulmonary condition improved rapidly. The pulse and temperature returned to normal in a few days. The cyanosis and dyspnea soon disappeared, but the physical signs in the lungs, as described above, persisted for some time. There was a constant cough with profuse expectoration. The sputum was mucopurulent in character, and at the beginning contained particles of meat and other food. Microscopical examination showed the presence of many pus cells, large squamous epitherial cells, and an unusual number and variety of microorganisms, most of which, even in fresh specimens, showed marked degenerative changes.

The further course and termination of the case is of interest. For three weeks, as previously stated, there was constant and complete inability to swallow. After that the condition became intermittent. The patient would swallow normally for a day or two, and then suddenly all the food would again enter the larynx. This, on several occasions, was followed by a chill and sudden rise of temperature, in one instance to 103° F., and by an accentuation of the physical signs in the lungs. During these periods of improvement it was observed that sensation would return in the cornea, larynx and pharynx.

As it appeared from the progress of the case that it would be more or less protracted, it was deemed advisable to instruct a member of the family as to the method of feeding through the tube, and to send her home. Then, after two days of such feeding, the case was suddenly terminated, when the patient, seated at the breakfast table, watched a member of the family drink a cup of tea. Seized by an uncontrollable desire to taste her favorite beverage she promptly drank three cupfuls. No ill effects followed. From then on the patient had no further impairment of deglutition, and rapidly returned to her former state of health.

The patient was seen five months later, when no trace of her former condition could be found. The sensation of the cornea, pharynx and larynx was normal. The gag reflex was present. She was able to raise her larynx and swallow without difficulty. The deglutition sounds at the ensiform cartilage were normal. The abnormal physical signs in the lungs were no longer present. Except for slight gastric disturbance the patient was in a normal state of health.

The diagnosis requires some consideration. The presence of neuropathic predisposition, the coexistence of certain other symptoms of a purely neurotic origin, the character of the onset of the case, and the absence of other findings, were sufficient to establish the fact that this impairment of deglutition had a physical rather than a true pathological basis. The marked salivation, the anesthesia of the pharynx and larynx and the exaggerated patellar reflexes would seem to indicate that the aphagia was due to a vagotonia of a severe type. Nevertheless, to establish a more certain diagnosis it was considered necessary to eliminate the possibility of several other conditions. Of these the first to be considered was paralysis of the recurrent laryngeal nerve, due to diphtheria or some other disease. If the entrance of food into the larynx was due to this cause, then there should be some impairment of speech, which was not the case. Furthermore, a laryngoscopic examination made by Dr. Willard A. Reynolds showed normal motility of the vocal cords and of the remainder of the larynx and pharynx. Next to be considered was the possible existence of a fistula leading from the esophagus into the trachea or lungs. If this was the case, it would be necessary for the food to first enter the esophagus and from there pass into the trachea or lungs. As the patient could not elevate her larynx, we know that this did not occur. To fully establish this fact and in part to confirm the diagnosis in general, Dr. John G. Williams made a series of röntgen ray examinations. These showed the entire barium meal, which was given with all possible precautions, distributed throughout the bronchi of both lungs, thus confirming the diagnosis previously made. The absence of paralysis of the tongue and the intermittent character of the condition were sufficient to exclude bulbar paralysis or other lesions involving the superior laryngeal nerve.

The extent and character of this impairment of deglutition will be more clearly understood if we briefly review the physiology of normal deglutition. This act is divided into three stages. During the first stage the food is carried through the mouth to the anterior pillars of the fauces. This act is voluntary and is accomplished by the muscular action of the tongue so that that organ is elevated against the soft palate. The first part of the deglutition was normal in this patient. During the second stage the food is carried from the anterior pillars of the fauces to the esophagus. This part, while it may be initiated by the will, is chiefly involuntary. It is a complex reflex act executed by the careful coordination of several more or less distinct muscular actions. By the elevation of the tongue against the hard palate and by the contraction of the anterior pillars of the fauces, the mouth cavity is shut off from the pharynx. By the elevation of the soft palate and uvula and by the contraction of the posterior pillars of the fauces, the openings into the nasal cavities are closed. By the adduction of the true and false vocal cords and, to a less extent, by the depression of the epiglottis, the entrance into the larynx is closed. Then, partly by the contraction of the pharyngeal muscles, but chiefly by the elevation of the larynx and floor of the pharynx as the result of the contraction of the mylohyoid muscles, the food in the pharynx is put under pressure and forced into the esophagus. This is the most important stage of deglutition. Its essential factors are the elevation of the larynx and the closure of the glottis. According to Howell, without the elevation of the glottis, deglutition is impossible. This second stage could not be executed by the patient. On account of her inability to raise the larynx, and the existence of spasm at the entrance, the food was prevented from entering the esophagus. Then, on account of the failure of the glottis to close, due no doubt to its loss of sensation, and on account of the inspiratory movement of the diaphragm which accompanies this stage of normal deglutition, the air pressure in the trachea and bronchi was diminished, and thereby the food forced into the lungs.

In the third stage the food passes along the esophagus into the stomach. In the case in question, when the food once entered the esophagus it readily passed into the stomach.

The centre of deglutition is in the medulla. Its afferent impulses are derived from the sensory fibres which supply the mucous membrane of the pharynx, including branches of the glossopharyngeal, geminal and the vagus. The most important of these is the superior laryngeal division of the vagus. In lower animals, artificial stimulation of this last nerve produces the act of deglutition. To what extent the anesthesia of the pharynx and larynx was the cause of the aphagia and by what chemical and physical changes mental impressions in the higher cerebral centres can produce such morbid changes in the function of these lower centres is a subject of especial interest to the neurologist.

CONCLUSIONS.

The special features in this case are:

1. The association of the habitus enteropticus and the neuropathic state.
2. The marked functional disturbance produced by suggestion in such an individual.
3. The complete and persistent character of the aphagia.
4. The marked tolerance established to the invasion of foreign matter into the lungs.
5. The sudden termination of the case through suggestion ending in the same manner as it began.

These combined form a clinical picture of unusual interest and rarity.

Sensory Aphasia*

By EVERETT M. ELLISON, A. M., M. D.,
Washington, D. C.,
Clinical Associate in Medicine, George Washington University Medical School

It is generally said that there are three steps in the language process: a, the knowing of what is to be said; b, the formulation of this in terms of imagery, and, c, the complicated course of innervation resulting in the actual expression.

Language may be classified as mimetic, phonetic, and graphic, depending upon the sign employed, whether gestures, or words, or writing. According to Luciani, psychological analysis and clinical observations show that the mechanism by which ideas are clothed in verbal symbols is quite complex, involving the intervention of three associated centres, viz., the centre for the motor images of words, Broca's, at the foot of the left third frontal convolution, the centre for phonetic verbal images, Wernicke's, in the left first temporal convolution and supramarginal gyrus, and the centre for visual verbal images, in the occipitoparietal lobe near the visual area.

According to Lloyd, there are four elements in language—auditory, motor, reading, and graphic—which are represented in fairly well determined areas of the cortex. The auditory is the primary centre, conventionally located in the first and second temporal gyri. It is primary in the sense that it is the centre first used by the child in acquiring language, and its importance is so great that it may be called the foundation stone of the entire linguistic edifice. Motor language, located by most observers in the third frontal convolution, is next in importance in evolution, for the child, having heard words, next attempts to utter them himself. These two centres form the great language organ, having been evolved in the history of the race long before writing was known, and being still the only parts used in many uneducated people.

Auditory language is the primary fact. The first knowledge of language is acquired by hearing it spoken. This is preeminently the centre for the mother tongue, and even in the socalled motor aphasia it is usually more or less impaired. In other words, ordinary aphasia is really sensorimotor. However, if the lesion is confined to the temporal convolutions, we have word deafness, in which the patient fails to understand what is said to him. But the motor apparatus, being originally dependent upon the auditory in the acquisition of speech, is also affected, not as a true motor aphasia but as a kind of paraphasia. It is noteworthy that, because of this improper use of words, giving a jargon or gibberish of speech, these patients have often been mistaken for dements. This sensory aphasia has been much commented on, and not a few cases are now on record in which the lesion was found postmortem in the temporal convolutions.

The mechanism of language is much more complicated in the literate than in the illiterate. It depends on the harmonized activity not only of the auditory and motor word centres but also of the visual word centres. According to Luciani, there are many clinical cases in which word deafness (sensory aphasia), from lesions confined to the auditory centre, is associated with loss or disturbance of speech (motor aphasia), but there are no cases on record of word blindness due to lesions confined to the visual sphere, in which the patient was incapable of speaking.

The definition of aphasia given in *Webster's Dictionary,* though interesting and practical, is hardly orthodox. It is: "Loss of power of speech or of the appropriate use of words, the vocal organs remaining intact, and the intelligence being preserved."

It really cannot be said that any cortical area is connected with definite speech functions. Entire areas of the cortex have been removed with the intention of abrogating speech, but without success. On the other hand, lesions corresponding to those expected are often found. The most interesting are in connection with agraphia. This is generally taken as dependent secondarily upon lesions of Wernicke's area about the angular gyrus, but cases of almost pure agraphia have been operated on, to find nothing wrong there. On the other hand, accepting the second frontal convolution as the area where writing images are stored, the convolution has been removed or destroyed without affecting writing. Also, cases can be cited which seem to prove that Broca's convolution is and also that it is not the chief seat of motor speech memories. These pathological conundrums probably mean that there are several routes between different brain areas, all more or less involved in the final production of intelligent speech.

Aphasia is a symptom of many cerebral conditions. Before Broca's time, the various theories of speech were of little interest to clinicians, most of them being confused with vague theological and metaphysical conceptions. The first real attempt to localize the faculty of articulate speech was made by Gall in 1808.

---

*Read before the George Washington University Medical Society, March 19, 1921.

Bouilland, a follower of Gall, published in 1825 a memoir called Clinical Researches to Demonstrate That Loss of Speech Corresponds with Lesions of the Anterior Lobules of the Brain, and to Confirm Gall's Opinion on the Seat of the Organ of Articulate Language. He reached the following conclusions from his clinical and anatomopathological observations: The human brain has an important function in the mechanism of a great number of movements; it regulates such as are under the control of the intelligence and the will. There are many special organs in the brain, each of which governs special movements. The organs for the movements of speech are directed by a distinct and independent brain centre which is in the anterior lobes. Loss of speech is due to either loss of memory for words or loss of the muscular movements from which speech results. Loss of speech does not imply loss of the movements of the tongue as an organ of mastication or deglutition of food, nor loss of taste, which suggests that the tongue has three distinct connections in the brain. Many nerves have their origin in the brain; those innervating the muscles which cooperate in the production of speech, originate in, or at least necessarily communicate with, the anterior lobes.

In 1861, Broca presented his first memoir to the Anthropological Society of Paris, in which he stated, on the basis of certain clinical cases, that lesions of the lower segment of the third frontal convolution of the left hemisphere (the socalled pars opercularis, or Broca's convolution) involved loss of the faculty of speech, that is, aphemia or aphasia. He showed this to his own satisfaction to be the seat of the cerebral organ of verbal articulation, or, more precisely, of the memory of a certain kind of coordinated movements necessary for the articulation of speech. In cases of lesions of this convolution, the memory of words is really not lost, nor are the nerves and muscles employed in phonation and spoken language paralyzed; it is only the memory of verbal articulation that is affected. Broca says: "We now know that all the parts of the brain properly socalled have not the same functions, that all the convolutions represent, not a single organ, but many organs or groups of organs, and that there are large distinct regions of the brain which correspond to the large regions of the mind."

A fact of special importance, because at variance with Munk's cortical deafness, is the absence in medical literature of any description of cases of deafness or marked loss of hearing in one or both ears, when the autopsy shows clearly and conclusively that there was a destructive lesion exclusively localized in the cortex. Clinical observation brings out a no less important positive fact, viz., that lesions of the cortex of the temporal lobes produce a curious mental disorder during life, characterized by the fact that the patients, while perfectly aware of the least sound or noise, are incapable of understanding the significance of the words they hear. Wernicke in 1874 first described this condition, which he termed sensory aphasia, because he counted it an affection of the paths of auditory speech. Kussmaul in 1876, after a more profound analysis, regarded it as an incomplete form of psychical deafness and called it word deafness, which finds its complement in word blindness.

Wernicke described five types of aphasia, motor, sensory, and those of conduction; but his greatest contribution to the subject, as already referred to, was the localization of sensory aphasia in the first temporal convolution. Henceforward, aphasia became an extremely complicated problem. In 1897, Lautzenberg summarized the situation regarding the disorders of speech as follows: "The outstanding characteristic of aphasia is that every observer thinks it necessary to formulate a theory of his own before recording the facts that he has noticed."

Lesions of Wernicke's centre produce word deafness. Lesions of Broca's and Wernicke's centres may produce alterations on the sensory side of speech, and total or partial incapacity for phonetic expression with more or less disturbance of internal speech. Dejerine says: "The auditory images are the first to be formed; they are the more deeply traced and always control the processes of internal language; the motor images of articulation next form very rapidly and unite closely with the auditory images. The union of these two contributes the first and indispensable basis of internal language."

The views of Marie and Dejerine are strongly opposed in many respects. Dejerine admits that the essence of aphasia is a failure of comprehension as regards spoken or written words, but he maintains that there is a difference between sensory and true motor aphasia. He believes that sensory aphasia is of necessity attributed to a lesion of Wernicke's zone, whereas true motor aphasia results from a lesion of the "anterior speech zone," a region variable in its extent, but which may be said to comprise Broca's area, the anterior segment of the island of Reil, and a variable area of the adjacent regions.

True aphasia, according to Marie, is one and one only, in that it is invariably associated with a failure to comprehend the association of the outward forms of language, spoken or written or heard, with the mental images that have arisen during life with these outward forms. He is quite original in his absolute denial that the third left frontal convolution has anything to do with the function of speech in any of its forms.

Marie's opinion as to the unity of all aphasias seems to be simple and valuable. The child at birth is unable to speak, to understand speech, or to write, yet not aphasic, for we are practically certain that it has the potentiality to speak, write, and understand speech. However, if this child at three is still unable to speak at all or to comprehend any of the forms of speech, then we think of its possibly being mentally defective; in other words, we then assume the presence of the failure of the centres of comprehension. This supposed child would be in the true sense aphasic. Practically speaking, word blindness as a congenital condition may be said to exist in every individual. This condition as a separate entity was first described by Pringle Morgan in 1896, since when the literature on the subject has rapidly increased. Ocular complications are never present, and a wordblind child may be a strong visual in other respects.

It is manifest that aphasia in the young child with undeveloped brain localities has only a superficial similarity to aphasia in the educated adult with some damaged areas or connections. In the adult, the cerebral areas on both sides are developed, and, usually, those on one side damaged. In the defectively developed brain of the congenital aphasic, there is no reason to consider the defect unilateral.

According to Marie, true aphasia is not the inability to utter words, but the inability to understand what is said or written or heard, and the disability to represent mental concepts by their accepted vocal or written equivalents. It is not, therefore, the result of the destruction of a centre in the old sense of the word, but a disorder of the integrating mechanism of the nervous system (according to Sherrington), a condition of diaschisis (according to Von Monakow), or apraxia (according to Liepmann). We now look upon all forms of aphasia as sensory in the sense that this type is associated with mental defect, and that the type of speechlessness not associated with impaired comprehension as not constituting true aphasia. Ordinary aphasia is sometimes considered to be the result of a combination of true aphasia with anarthria. Laignel-Lavastine, in determining the existence of aphasia, emphasizes the necessity for eight different forms of tests, viz., spontaneous speech, repeated words, reading aloud, spontaneous writing, writing from copy, writing from dictation, study of comprehension of spoken words, and study of comprehension of printed words.

Among the most characteristic forms of speech disturbance due to lesions of the cerebral cortex, is verbal amnesia, which is clinically quite distinct from word deafness. In the former there is more or less complete loss of memory of the auditory images of speech; in the latter, it is merely the power of recalling such images which is absent. It is true that verbal deafness necessarily involves amnesia, but their coexistence is not absolutely inevitable, for verbal amnesia may be present without a trace of word deafness. In verbal amnesia, the patient cannot recall words, especially names, but upon being given the name he at once recognizes it and may even be able to repeat it, showing that he is not word deaf to that word, because he recognizes it when he hears it, and that he has not motor aphasia, because he can utter it. Many writers attempt to make out a distinct centre for verbal amnesia, but it is probably only a part of sensorimotor aphasia.

An interesting case of word blindness is reported by Laveson. The patient tells her own story. "What is the reason, doctor, that everything in a book or newspaper is illegible to me? Last evening I sent an advertisement to the Herald for a waitress, and, when the girls came this morning, I could not read their references. I then took up the Herald and found that I could not read a word in it. At first I supposed that my eyesight had failed, but I could see everything around the room as well as ever, and so also with my crochet work. I then opened the Bible, but could not read a word. 'What is the matter with me?" This woman never saw a word from then to the time of her death, two years later. She had no other disorder of speech, and none of vision. She heard every word coming to her ears and could speak as fluently as ever, but no word could reach her consciousness through her eyes.

Lloyd recently presented before the Philadelphia Neurological Society an interesting case of traumatic sensory aphasia, characterized by word deafness and word blindness, without motor aphasia, but with agraphia and astereognosis, with slight anesthesia, in the right hand. The one thing of special interest in this case was the fact that he had no motor aphasia. He could talk a "straight streak," but not correctly. He had a sort of paraphasia, which resembled verbal amnesia, which two conditions are in fact hard to separate.

It is only through the psychomotor reactions that we gain information about the psychosensory processes, and the psychosensory functions are, on the other hand, involved in all our tests for the psychomotor functions as necessary for the transmission of the test stimulus. Concerning the practical examination and the distinction between the different forms of psychomotor and psychosensory disturbances, it must be admitted that the different psychomotor and psychosensory functions are interdependent. As on the lower level, the control of the sensory function is necessary for the perfect execution of motor functions, so are psychosensory functions necessary for the perfect execution of the psychomotor functions. When the deep sensation becomes deficient in tabes dorsalis, the affected limbs become ataxic. In the same way, sensory aphasia leads to disturbances of speech, paraphasia.

Motor aphasia may present an almost total absence of words or a copious vocabulary wrongly used. Sensory aphasia may present a situation where the patient is able to comprehend ideas already furnished for him but which he cannot voluntarily construct, or he may be able to present ideas which he fails to comprehend when they are presented to him. The more complex and voluntary parts of speech suffer first, the more automatic last.

With aphasics, simple signs, the Arabic numerals, single letters, and the individual's own name are, as a rule, learned easily and used intelligently, though there are at times difficulties in these. Many persons lose all facility and even forget reading a year or two after leaving school. For example, a wordblind boy, who could do long division well, was unable four years later to manage more than single integers, although then earning good wages on metal work. Thomas in 1904, on the basis of observation in London schools, estimated that one in every two thousand boys was affected with wordblindness; Warburg in 1908 found this percentage much higher in Cologne school children, fourteen in every two thousand.

Thomas relates how he taught a boy rather word-deaf to say, "The road is almost like a stream." Fifteen minutes later, on being asked to repeat this, he said, "The road is almost like a river." This was taken to mean retention of a visual rather than an auditory image.

In dreams, where one sees papers, books, or notices, it seems impossible to read what is printed on them, as it is jumbled into a mass of syllables and letters like agraphic writing. The letters are all clear enough, they embrace other forms than usual signs, but on attempting to fix them one is like the wordblind boy who said, "I can see the letters all right, but they blur over and swim a little." So that, in dreams where intellectual processes are somewhat overshadowed by emotional, there may be experienced a functional word blindness.

Burr from observation of an aphasic girl, aged seventeen, picked up as a vagrant by the police, suggests that the "wild children" recorded in the past were probably strayed aphasics, as they showed intelligence and ability above the imbecile and yet were unable to acquire or use language.

Speech has rather often in both ancient and modern times been, as it were, instantaneously acquired by mutes. Herodotus tells of a son of Croesus who had never been known to speak and whose cure had in vain been attempted, who at the siege of Sardis was so overcome with astonishment and terror at seeing the king, his father, in danger of being slain by a Persian soldier, that he exclaimed aloud, "Oh, man, kill not Croesus!" This was his first articulation, but thereafter he retained the faculty of speech to the end of his life. Wigan, the author of the *Duality of the Mind,* had a patient eight years old, sound in intellect but perfectly dumb, and whose family had abandoned all hope of curing him, who, seeing his father fall overboard from a boat on the Thames, cried aloud, "Oh, save him, save him!" and from that moment spoke with almost as much ease as his brother. Bastian was consulted about a boy, the son of a prominent lawyer, who had had convulsions in infancy and at five years old had not spoken a single word. He and other physicians consulted about his dumbness could not help him; but before the year's end after an accident to one of his favorite toys, he suddenly exclaimed, "What a pity." The same words could not be repeated nor were other words spoken for two weeks, but thereafter he began to speak well and soon became loquacious.

In 1917, Marie and Foix discussed in the literature the aphasics caused by the wounds of war. Their paper is illustrated with diagrams of the conventional kind, but postmorten findings are wanting. Marie still insists that our commonly observed motor aphasia should be called anarthria and that it does not depend on a lesion exclusively located in Broca's convolution, but in a wider area, including the lower third of the ascending frontal convolution and the island of Reil. Moreover, Marie does not deny that the extreme posterior end of the third frontal convolution is included in this area. It is probable that such precise delimitations and such arbitrary changes of names are hardly warranted. As for sensory aphasia, Marie still follows closely the old lines in placing the centres of word deafness and word blindness, respectively, in the temporal gyri and the angular gyrus.

Von Monakow, in illustrating his theory of diaschisis, assigns a different interpretation to those defects of speech which are seen after a lesion and which (he states) are slight in degree and soon pass off, and those which remain well marked and permanent. The early symptoms, which are transitory, are due to a lowering of functional activity in a distinct part of the speech mechanism, caused by the upsetting of balance between the several parts of the mechanism, produced by the destruction of one of the integral parts by the lesion. He insists that the nervous system acts as a whole, and so with the speech mechanism. That is, if in a case of motor aphasia Broca's area is destroyed, the independent areas existing in the belief of Von Monakow, according to the old diagrammatical scheme of localization, also suffer. So a lesion in the motor speech area would produce a depression of function in the visual, auditory, and other speech areas and thus cause the resultant pronounced aphasia. Von Monakow believes with Marie, Grosset, and others that the aphasia is simply a defect of intelligence, as originally held by Trousseau.

It is not absoultely essential to our conception of speech disturbances or voluntary movements that they be localized in either hemisphere alone, and caution should surely be used in adhering strictly to the viewpoint that these special skilled acts, of which speech is one, have their correlating centres almost exclusively in the left hemisphere. In nearly all the reported cases of apraxia with autopsy and in many cases of aphasia with autopsy, lesions are found in both hemispheres. Probably the most sensible view is that the whole cortex is indivisibly associated with the development of the function of speech and its expression, and also with the development of the function of specialized purposeful movement and its performance.

According to Liepmann's researches, ninety-five and one half per cent. of all persons are righthanded, and, therefore, their left hemispheres lead in the production of purposeful movements and in speech utterance. Bearing on the point of stock brainedness, that is, the tendency in families to have the left or the right hemisphere predominating for speech and voluntary movement, as is shown by the right or lefthandedness of such individuals, the work of Kennedy is of interest. He asserts that while certain individuals of a righthanded stock may be lefthanded, in these the speech centre is always in the left hemisphere. He also applies the same rule to individuals of lefthanded stock who are righthanded, the leading hemisphere in these being the right one. He calls on these observations to explain the existence of crossed aphasias, that is, aphasias occurring in righthanded individuals with left hemiplegia and in lefthanded individuals with right hemiplegia.

Osnato reports five cases of Alzheimer's disease, characterized chiefly by aphasia, apraxia, and agnosia. These cases do not confirm the presence of focal and diagrammatic cortical localization areas for speech and voluntary movement. On the other hand, they seem to prove the contention that the function of speech and voluntary movement is an integral part of the development of the functions of the entire brain, and is not capable of being anatomically, physiologically, or psychologically separated into centres.

In conclusion, we might properly summarize by accepting the views of Herrick concerning the functions of the cerebral cortex. Specific mental acts or faculties are not resident in particular cortical areas, but all conscious processes probably require the discharge of nervous energy throughout extensive regions of the cortex, and the character of the consciousness depends in each case upon the dynamic pattern of this discharge and the sequence of function of its component systems. No cortical area can be properly described as the exclusive centre of any particular function. Such centres are merely nodal points in an extremely complex system of neurons which must act as a whole in order to perform any function whatsoever. Their relation to cerebral functions is analagous to that of the railway stations of a big city to traffic, each drawing from the whole city its appropriate share of passengers and freight. Their great clinical value grows out of this segregation of fibres of like functional systems in a narrow space, and not to any mysterious power of generating psychic or any other special forces of their own. The essence of cortical function is correlations, and a cortical centre for the performance of a particular function is a physiological absurdity.

1720 M STREET.

Shaker Celibacy and Salacity Psychologically Interpreted

By THEODORE SCHROEDER.
Cos Cob, Conn.

As lust conceived by the fall
Hath more or less affected all
So we believe 'tis only this
That keepeth souls from perfect bliss.
—*From a Shaker Poem.*

Among the English prophets, James Wardley (or Wardlaw) was destined to exert a greater influence upon American religious sentiment than any other. Wardley succumbed to the seductive argument of a few French innovators, who came to England proclaiming a general apostasy of the Christian Church, and insisting upon the necessity for new revelation. Always the new superenthusiasts proclaim the apostasy of their relatively unemotional coreligionists. Wardley's religious zeal was said to have been accompanied by polygamy. Mrs. Stanley, *née* Lee, one of Wardley's followers and later his successor in the prophetic office, was born, 1736, at Manchester, England. She was the daughter of a blacksmith, and one of eight children. During childhood she worked in a cotton factory, and did not learn to read or write.

W. H. Dixon spent some time among the Shakers of Mount Lebanon and obtained first hand information concerning Ann Lee. He describes her as "a wild creature from her birth, a prey to hysteria and convulsions; violent in her conduct, ambitious of notice, and devoured by the lust for power" (1), the compensations for a feeling of inferiority. An evolutionary psychologist might have added that she was content to satisfy her lust for power on the infantile level of phantasy and magic, rather than on the maturer level of practical achievement in the actual promotion of human well being or cultural development.

Her own followers state that "in childhood, she exhibited a bright, sagacious, and active genius. She was not addicted to play, like other children of her age, but was serious and thoughtful. She was early the subject of religious impressions, and was often favored by heavenly visions" (2). Here are signs of precocity and subjectivity such as are a usual accompaniment of sexual precocity, and sexual shame.

She was an epileptic, and saw Christ come to her both physically and spiritually (3). By her followers, she was considered a sort of female incarnation of Jesus of Nazareth, and her divine perfection was implied in the familiar appellation of: Ann the Word. She was the word made flesh. She was the woman, so they asserted, referred to by the Apostle as being "clothed with the sun, and moon under her feet and upon her head a crown of twelve stars" (4). Mrs. Stanley at her death was succeeded by a niece, also known by the same name, Mother Ann Lee.

It is further stated that "as she advanced in years she was strongly impressed with a sense of the deep depravity of human nature, and the odiousness of sin, especially the impure and indecent nature of sexual coition for mere gratification. To her mother she often expressed her feelings respecting these things and earnestly desired to be kept and preserved from sin, and from those abominations her soul so much abhorred." These lines suggest a consciousness of need for protection from excessive sexual cravings. In these facts we see sexual precocity and a resultant emotional conflict. This will usually express itself either in exhibitionism or in prudery, or a combination of both. Whenever charged with considerable emotional value, then prudery and theories of the sacredness or the spirituality of sex are always a mask for a shameful salacity. By way of emphasizing her sexuoemotional conflict it was even said that "she suffered most violent temptations" and "the agony of her soul was often so extreme as to occasion a perspiration of blood."

"But notwithstanding her (occasional emotional) repugnance to the married state, through the importunities of her relations, she was induced to be married to Abraham Stanley, a blacksmith, by whom she had four children, all of which died in their infancy. She continued to reside at her father's house; but the convictions of her youth (in relation to sex) often returned upon her with much force, which at length brought her under excessive tribulation of soul, in which she sought earnestly for deliverance from bondage of (sexual) sin, and gave herself no rest, day or night, but often spent whole nights in laboring and crying to God to open some way of salvation" (5).

For the psychoanalyst these facts suggest a father-complex, with its incestuous erotic interest and the incest barrier, transferred from the father and operating toward her husband. Thus her childhood erotic conflicts furnish the foundation for the feeling of great sin, of shame, and of great inferiority. Against this there was a great need for compensatory exaltation. A suppressed erotism furnished the dynamic basis, and measured the corresponding need of a compensatory neutralizer for her fear, shame and inferiority feeling. This then is the preparation for the acceptance of any intellectualization of her feeling states that would answer these compensatory or neutralizing purposes.

At about this time, while in the midst of an intense mental struggle, rendered more acute by her unhappy marital experience, she came into contact with Jane and James Wardley. The Wardley's supplied Ann Lee with a verbal formula by which the feeling of inferiority, apparently due to sexuo-moral conflicts, could be converted into a corresponding compensatory exaltation which seemingly placed her as far above average humanity as formerly she had felt herself beneath it.

About this Quaker couple whom Ann Lee succeeded, Dixon writes: "A poor woman, living at Bolton-on-the-Moors, a bleak and grimy town, in the most stony part of South Lancashire, announced that she had received a call from heaven to go about the streets of her native town and testify for the truth. Her name was Jane; her husband, James Wardley, a tailor, with gifts of speech, had become her first convert and expositor. These poor people had previously belonged to the Society of Friends; in which they had been forward in bringing testimony against oaths, against war, against formality in worship. Living in a hard and rocky district, in the midst of a coarse and brutal population, Jane had seen about her, from her youth upwards, a careless church, a Papist gentry, a drunken and fanatical crowd. Going into the market place, she had declared to these people that the end of all things was at hand, that Christ was about to reign, that His second appearing would be in a woman's form, as had long ago been prefigured in the Psalms. Jane had never said that she herself was the female Christ; but she had acted as though she believed that all the powers of earth and heaven had been given into her hands; receiving converts in His name, confessing and remitting sins, holding communications with unseen spirits. It was assumed by her own people that she was filled by the Holy Ghost; and whatsoever thing she affirmed, in the power of her attendant spirits, had been received by her followers as the voice of God" (6).

Ann Lee was twenty years of age when she joined the sect of Jane Wardley. F. W. Evans in his sympathetic biography of Ann Lee relates (7) that: "The light of these people led them to an open confession of every sin they had committed, and to take up a full and final cross against everything they knew to be evil. This endowed them with great power over sin; and here Ann found that protection she had so long desired, and which corresponded with her faith at that time. She was baptized into the same Spirit, and by degrees travelled to the full knowledge and experience of all the spiritual truths of the society."

Fired with the enthusiasm of the new light she had received, Ann Lee sallied forth into the street to "witness for the truth." She became a notorious character on the streets, the butt of rough lads and lassies of her native town, until the prosy old constable seized her as a nuisance and the parish magistrate committed her to jail.

As indicating the intensity of her erotic conflict and its morbid agonies, we may quote her own story of her own baptism into the new faith. Of this Ann Lee said to her followers (8): "I love the day when I first received the Gospel. I call it my birthday. I cried to God, without intermission, for three days and three nights, that He would give true desires. And when I received a gift of God (was this an "innocent" psychic orgasm?) I did not go away and forget it, and travel no further; but I stood faithful, day and night, warring against all sin, and praying to God for deliverance from the very nature of sin. And other persons need not expect to find power over sin without the same labor and travail of soul.

"I felt such a sense of my sins that I was willing to confess them before the whole world. I confessed my sins to my elders, one by one, and repented of them in the same manner. (In the light of later evidence this need for repetition seems to be the product of exhibitionism.) When my elders reproved me, I felt determined not to be reproved for the same thing, but to labor to overcome the evil for myself."

Of course for such persons there is but one great evil, one sin, namely, sexual desire and its gratification. Not having overcome her passions there was frequent need for renewed resolutions. Having a psychologic inhibition against normal gratification, she must make a virtue of her deprivation, which will be commensurate with the sorrows thereof.

"Soon after I set out to travel in the way of God, I labored a-nights in the work of God. Sometimes I went to bed and slept; but in the morning, if I could not feel that sense of the work of God that I did before I slept, I would labor all night. This I did many nights, and in daytime I put my hands to work, and my heart to God; and when I felt weary and in need of rest, I labored for the power of God, and the refreshing operations thereof would release me, so that I felt able to go to my work again." A psychologic orgasmic explosion relieves the tension just as the procreation relieves a distressing repression. This relief was as necessary to the organism as its "spiritual" interpretation was necessary to neutralize the feeling of guilt and of shame.

"Many times, when I was about my work, I have felt my soul overwhelmed with sorrow. (The erotic conflict with its reproachful repression and indulgence and with their resultant feeling of inferiority.) I used to work as long as I could keep it concealed, and then would go out of sight lest any one should pity me with that pity which was not of God. In my travail and tribulation my sufferings were so great that my flesh consumed upon my bones, bloody sweat pressed through the pores of my skin, and I became as helpless as an infant. (These passages indicate the extreme morbidity of her sexuomoralistic conflict.) And when I was brought through (by a psychological orgasm) and born into the spiritual kingdom, I was like an infant just born into the natural world. They see colors and objects but they do not know what they see. It was so with me; but before I was twenty-four hours old, I saw and I knew what I saw."

Is not this once again the description of a very depressing erotic suppression followed by an explosion, a psychological orgasm? Or is it really spiritual enjoyment of the superhuman?

This spiritual struggle was a long drawn combat in the realm of the inferiority-superiority conflict which nearly always accompanies shameful sexual emotions and indulgences. It kept her enmeshed, body and soul, for nine years, before a crisis was reached and a satisfactory neutralizer found for her guilt and her shame. Her first jail experience precipitated the solution to her conflicting mental state. In the words of her followers: "the ultimate fruit of the labor and suffering of soul that Ann passed through was to purify and fitly prepare her for becoming a temple in whom the same Christ Spirit that had made a first appearance to Jesus at his baptism by John in the Jordan (the river of Judgment), at which time he received the annointing which constituted him Jesus Christ, could make a second appearing."

Some sort of identification with the absolute is always an available refuge, a soothing though phantasmal compensation, for the victims of erotic depression and its resultant feeling of inferiority. Many if not most of hystericals avail themselves of it. I believe that all mysticism is a means of supreme exaltation, needed to neutralize a feeling of inferiority which is founded upon erotic emotional disturbances. Morbid depressions and great emotional egotism are but different aspects of the same emotional disequilibrium. At least, this is my tentative generalization based upon all the evidence that has come to me during extensive investigation. Let us return to Ann Lee.

Meanwhile "she spent much time in earnest and incessant cries to God to show her the foundation of man's loss, what it was, and wherein it consisted; and how the way of salvation could be discovered and eventually opened to mankind in the state they were then in, and how the great work of redemption was to be accomplished."

Her hallucinations, visions, ecstacies and dreams, "divine manifestations" as they were called, she promptly communicated to the little society founded by the Wardleys and this "tended greatly to enlighten the minds and strengthen the faith of the members, and to increase and confirm the testimony." Those who have the more intense conflicts tend to invent theories and a technic for acquiring compensatory experiences of superhuman affiliation and exaltation. The lesser hysterics appropriate these experiences of others to like ends, but with a fervor that is diluted because the lesser abnormality precludes the more complete and obsessing "spirituality." These lesser hysterics become mere followers and support the discoverers and their similarly afflicted apostles or priesthood. So the lesser hystericals also secure their lesser compensations by being content to shine by a reflected light. They secure salvation by proxy.

While Mother Ann was lying in Old Bailey prison, on the Irewell in Manchester, on account of her testimony against "fleshly lusts, which war against the soul," she felt a light shining upon her and Jesus Christ appeared to her in open vision, and revealed to her "the most astonishing views and divine manifestations of truth, in which she had a perfect and clear sight of the 'mystery of iniquity,' the root and foundation of all human depravity, and of the very act of transgression committed by Adam and Eve in the garden of Eden." Thus Jesus becomes the heavenly bridegroom of many, many orthodox saints (9). Thus a psychological inhibition against the enjoyments of a normal sexual life with her husband would impel Ann Lee toward finding a compensation in a phantasmal lover, at once an idealized father—an elder brother—and a husband. So a psychoerotic interest in Jesus supplies sinless satisfaction and a seeming solution for the moralistic conflict.

"Thus it was made plain to her understanding how and in what manner all mankind were lost from God," states Evans in his biography of Ann Lee (10), "and that a complete cross against the lusts of generation, added to a full and explicit confession, before witnesses, of all the sins committed under its influence was the only possible effectual remedy and means of salvation; and also that absolute death (psychological inhibition) to the (normal) generative or propagative life itself (in even its most innocent, uncorrupted state) was the preliminary state to the quickening and resurrection of the hidden spiritual life of God in the soul. . . ."

Ann Lee went to prison a meek, though noisy follower of Jane Wardley. While there she found Christ in a more intimate relationship to her than ever before; in fact, she claimed that He became one with her in form and spirit, a pretension which Jane Wardley did not quite dare to make for herself. The result was that when Ann Lee came out of prison the six or seven followers to whom she told her story lifted her to the rank of Mother, in place of the tailor's wife, the founder of the sect and former leader. Thus her spiritual ministry as Mother dates from her first prison experience. Upon her release the shaking and dancing, the singing and shouting by which the meetings of the little group of adherents obtained or manifested "the gift of the Holy Spirit," increased in fervor and fury (11). There was an abundance of prophesying and of speaking in unknown tongues. "From that time" (1770), states the biography, "Mother Ann by the immediate revelation of Christ, bore an open testimony against all lustful gratifications, as the source and foundation of human corruption and misery. She testified in the most plain and pointed manner that no soul could follow Christ in the regeneration while living in the works of natural generation." A socalled "spiritual" relief for repressed longing was still all right, and perhaps the very essence of regeneration.

The normal sex life precludes psychic erotism, which is the essence of spirituality. In their morbid development there come those extremes of sexual hyperestheticism which are the very essence of "spiritual union" with gods and ghosts. Those who are any way inhibited from a normally satisfying sexual life easily make a virtue of their misfortune, and achieve a compensation by means of the socalled supernormal or superhuman exaltation of their spirituality that is their psychological erotism. This is accomplished by the simple trick of adopting a new and spiritual explanation for commonplace facts of the neurosexual organism. But the subjective emotional conflict is not thus eliminated. Consequently, the victims of this sort of self deception may become very vehement in their denunciation of the normal relation, as well as very morbid in their desires for gratification. The difficulty of restraining their own sexual impulses is measurable by the intensity of their devotion to social purity. This is the psychogenetics of the endless war between the flesh and the spirit—between works and faith—morals and grace, the religion of authority and the religion of personal experience or of the spirit, etc., etc.

The character of the conviction which Ann Lee carried among her followers is plainly indicated in her biography: "The ministration of power over all sin, attended with visions, revelations and other spiritual gifts, was the seal of Mother Ann's testimony to those who received it." These, of course, are the wellknown accompaniment of erotic hyperestheticism, the symptoms of hysteria.

The ardor of her religious followers led to many violent scenes after her release from prison. The band of believers was small but noisy. They attracted the attention of many outsiders who were amused at the pretensions of this female Christ. The divine services of the little group were often interrupted by tumultuous mobs, attracted by the shouting and singing and contortions of the believers. Physical encounters were not infrequent. Ann Lee was often severely and cruelly abused by pious ruffians, who several times arrested her in addition. In reading the descriptions of mob behavior under the influence of intolerance one may be reminded of its similarity to mob behavior now directed against industrial and economic radicals. Violence against Ann Lee was followed by accounts of her miraculous escapes. Even members of her own family are accused of beating her severely, but of course God again determined to prevent real pain.

On being asked by Joseph Meacham how it was that she, a woman, not only presumed to teach in the church but was even the Head of it, Ann Lee replied: "The order of God in the natural creation is a figure (symbol) of the order of God in the spiritual creation. . . . As in nature it requires a man and a woman to reproduce children, the man is first and the woman is second in the government of the family; he is the father and she is the mother; and the male and female children must be subject to their parents and the woman subject to her husband, who is the *first;* and when the man is gone, the right government does not belong to the children, but to the woman; so is the family of Christ!" (12).

In the choice of this sexual analogy we see a sex determinant showing that the achievement of complete sexual indifference had not been attained. So when Jesus, the male manifestation of divinity, is gone Mother Ann Lee, the female manifestation of divinity and the bride of Christ, naturally becomes the mistress of the godly household, the leader of the spiritual children. Herein we see what Adler calls the masculine protest. To compensate for the feeling of inferiority, which her femininity among other circumstances seemed to impose on her, she replaces Jesus to become the leader of the spiritual world.

"When I was a child," says Ann Lee, while giving instructions about rearing children, "my mind was taken with the things of God, so that I saw heavenly visions instead of trifling toys. Do all your work as though you had a thousand years to live and as though you were going to die tomorrow." In this turning away from childish things for godly things, I seem to see a premature precocity—and its emotional conflicts. For the feeling of inferiority, as a mere human below average, there came a compensation in the thought of unusual intimacy with things superhuman. Those who cannot adjust their feelings to things as they are often and easily achieve compensations in a world of heavenly or spiritual phantasy.

On another occasion she said of herself: "Once my feet walked in forbidden paths; my hands handled unclean things (autoerotism?), and my eyes saw nothing of God aright. Now my eyes see, my ears hear, and my hands handle the Word of Life." By such statements Mother Ann shows that the feeling of inferiority had a double foundation, namely, her femininity and her consciousness of sin. The child overburdened with a sense of sin practically always supplies the dynamics thereof from sex-shame, because their "hands handle unclean things."

The Shaker party arrived in America in 1774. Material necessities at first limited their activities. They put the laws of God above the laws of man. The revolutionary spirit of America came in conflict with Ann Lee's pacifism and again brought her to prison, this time at Albany, N. Y. This incarceration made her the centre of attention by a group of orthodox revivalists and started a new era of success.

Thoroughly obsessed by her violent passions and the fearful belief in the necessity of suppressing them, quite inevitably her conflict resulted in libidinous dreams. In one of the "astonishing visions" she had a "full and clear view of the mystery of iniquity and of the very act of transgression committed by the first man and the first woman," that act being one terminating their virginity.

Thus by viewing this "very act," she came to know "that the very foundation of man's loss centres in the work of carnal coition." She refused now to live in sex relation with her husband, and was by him deserted for another woman. Sex suppression accompanied by her sexual polarity of mind necessarily combined to develop an increased intensity of sexual feeling associated, of course, with like increase in the intensity of her religious emotions. Ann Lee's sexualism now permeated her every religious thought, furnished the determinant for such philosophy as she professed, and the imagery in her forms of speech.

"As the first Eve was the first to violate the temple of chastity and to lead man into the work of generation," so it was the most fitting that God should choose Ann Lee, a woman, to break the charm of sexual sin which binds mankind, and thus make her "the manifestation of the spirit of Christ, in the female line." Spiritual regeneration was divided into two parts, which Mother Ann likened to the acts of generation and parturition. She proclaimed the "dual order of the Kingdom of Christ." As there is a "God the Father," so there must be also a "God the Mother." "It is the spirit in the male and female by which souls are begotten and born in the regeneration." "As Adam had a body containing the substance of the male and female before Eve was taken from it, so had Christ," and "Mother Ann" is Christ's Eve. "The marriage of the Lamb is come and his wife hath made herself ready." Thus a psychological inhibition against a normal sexual life with her husband seems to have found compensation in a phantasmal lover, who is an idealized father, an elder brother, as well as a husband, to love whom was for her a psychological enjoyment of erotism and a sinless compromise with passion.

As there can be no generation in the flesh without the union of male and female, so there can be no spiritual regeneration without the "united influence of spiritual parents, in the order of males and females." Thus Ann Lee evolved into the exalted station of a "Spiritual mother in Christ" to all her followers. By her spiritual marital union with Jesus, she secured also a phantasmal compensatory exaltation, to relieve the tension of her sexuo-emotional conflict, as well as the feeling of inferiority derived from her "sinful" sex passions.

And so we might continue through ever so many of her acts and thoughts, and we would find side by side the correlated influence of her abnormal sex conditions, with her religious emotions and the theology built upon them. But repressed eroticism, even with the best of religious formulæ, will not always be content with purely spiritual outlets. The evident sexual obsession of our prophetess confirms the many statements as to her occasional licentious conduct. These disclosures were made under oath, and are alleged upon personal knowledge. These will again exhibit the psychologic unity of desperate asceticism and excessive sensuality. The hostile critics of Shakerism say that Mother Ann left her husband under pretense of asceticism "to cover her own miscarriages," and that in England she supported herself "at the expense of her character." In 1770 she received the "manifestation of the second heir in the covenant of life," and then began declaiming against marriage and coitus. Now she had attained the state of "sinless perfection," the claim of which attainment was an important neutralizer for the depressions due to her unsatisfied lusts, their irregular gratification, and the resultant subjective moral conflicts.

In America (after 1774) she and her companions acquired the reputations of "dissolute characters." "The report was, they practised singing, fiddling, dancing and whirling, telling fortunes, playing cards, drunkenness, with other conduct too bad to write." Ann's reckless promiscuity is said to have insured to her a venereal disease. During the Revolution "at midday she once dared a drum major to beastly conduct, for which she was drummed out of camp, and the drum major for accepting the challenge was displaced from his office." Alcoholic beverages, by intensifying the phantasies, minimized the consciousness of objectives and of the fears of objective origin. So it encouraged spiritual experiences, accompanied by licentiousness. It was said that ardent spirits used freely "would assist in overcoming fallen nature." Now they began to teach that many things, "forbidden to man in his carnal state, are allowed and innocent to the spiritually minded." The initiates were compelled to mortify the flesh by bodily macerations, quite as cruel, though not as prolonged, as those indulged by the early ascetics. Some of these, it is said, were "too indecent to name" or "unfit for publication." Unto the spiritually minded, all that they are glad to acknowledge to themselves becomes spiritual. Some of this exposé which was deemed sufficiently proper for publication will follow, as condensed from the sworn statement of eye witnesses:

"I have seen Mother (Ann Lee) at Niskeyuna, in times of her intoxication, come into a room where many were gathered for a meeting, and were, by her order, stripped naked. I have seen her slap the men, rub her hands on all parts of their bodies, etc. All the time she would be humming and making an enchanting noise. . . . Once, in a meeting at Petersham, Mass., the Mother came in, leading with her a naked man, whom she committed to another named Aaron Wood, saying, 'This man must go through the mill.' Aaron was stout; he whirled him 'round, then threw him on the floor, hauled him around by the hair of his head, calling out 'You bestial devil!' which caused the man to groan bitterly and he appeared almost dead. After other indecent conduct, Mother told the women to dog him off." The man's wife was among the onlookers.

The following from a Shaker poem seems to confirm this:

> We say we have our sins confessed;
> And in one faith we all agree,
> That from all sin we will be free,
> No secret lust do we conceive,
> *But open plainly all we feel;*
>
> We ever stand in open view,
> And can hide nothing that we do.
> And all our actions day and night
> Are free and open to the light;
> Our confidence no man can crush,
> *Or put a Shaker to the blush.*

"A man named Shepard constantly attended on Mother. This man, Elder Whitaker said, was born a eunuch, had no sinful nature, and, therefore, we could not be suspicious. Shepard afterwards left the Shakers and became the father of several children." Both sexes are said to have bathed together in nudity by Ann Lee's orders. Doubtless this was thought of as proof of being above the temptations of the flesh.

Another witness swears: "I saw Ann Lee locked in the arms of a naked man; they placed themselves in the centre of the company (of about fifty). One man asked Ann Lee if he might strip off his clothes. Answer, 'Yes, you may all strip,' and likewise all of the men stripped off their clothes, and continued in that situation, dancing and carousing for the space of three or four hours." Perhaps the following verse from a Shaker poem confirms this charge:

> In silent pray'r sometimes we kneel,
> Or sing, or speak just as we feel;
> And as salvation we possess,
> Our joy and gladness to express,
> We dance, each like a living spark,
> *As David danc'd before the art.*

Did not David dance in nudity (13)?

Ofttimes, when Ann Lee was overcome with excessive intoxication, her resultant sickness was explained as suffering for the sins of others, and then she demanded more rum or brandy to strengthen her to bear her burden. These strange scenes seem to have been of regular and frequent occurrence in these early years of American Shakerism. It is said that Aaron Wood would "frequently by orders seize a man in a shameful manner, haul him about, and abuse him in a manner too indecent to write." (Manustupration?)

There are some grounds for suspecting that some were emasculated involuntarily. At one time the leaders contemplated the selection of certain men and women for the purpose of producing holy children. Yet it was forbidden that those not of the elect even touch so much as the hand of his wife, while extraordinary dances in the nude continued among the elect as a means of "fighting the devil." They had the gift of speaking in unknown tongues, and inflicted painful penalties to subdue the flesh.

One girl, because an older man manifested an interest in her, "was stripped naked, in the presence of both men and women, and whipped most unmercifully. My brother was taken into the house by the leaders, and in the presence of both men and women was stripped naked, and was told it was for having converse with that girl, and that they were about to punish him to subdue the lusts of the flesh and the devil. They then led him down to the tanyard, tied a cord around his private parts, and led him about the yard until those parts were turned black. The cruel treatment lasted about an hour."

One more testimonial and I shall close. This evidence also comes from apostates and opponents: "The Shakers, amidst all their professions, lived in whoredom. One Shaker woman was brought to my house and delivered of a child. This was after she had been a Shaker for a number of years, and continued a Shaker. One evening, when many of both sexes were gathered for meeting, after dancing, those women, by orders, from their bosoms nursed those men. One day when haying, three or four women with men were raking hay in the same field; one of the Shakers, a married man (he was promoted among the Shakers for his extraordinary power), behaved very unbecoming to those women, not fit to write. The following evening, after those women had gone upstairs to rest, this man brought them downstairs one by one, their legs over his shoulders, their backs to his back, and their heads down" (14). Much of this affidavit is omitted. Obviously all of this is but the exhibitionism and sex play of those who are still children as to their psychosexual impulses and valuations. Likewise, all those who are still in the throes of the childhood conflicts over sex will find it necessary to manifest an intense aversion to these childish acts. Their resentment will be as intense as the feeling-necessity for concealment of the same conflict within themselves. As is to be expected from such people, we also find charges of homosexuality hurled back and forth between those who had left and some who had remained in the society (15).

Their manner of breaking up family ties and affections was considered by their enemies even more cruel than that imposed by the morbid desert hermits. There are many references to the treatment of persons suspected of insanity among the Shakers. The conduct of the leaders toward such, and the attitude of the masses, bears little doubt but that all must have been dwellers in the borderland betwixt insanity and healthy mindedness. Like all mystics from sexual suppression, or hyperestheticism, there came to be among these people talk of spiritual affinities and spiritual wedlock (16), and universal love, intellectualizing erotomania.

So pronounced is this sex influence in promoting religious revivals, that, from among the revivals that obtained in America in the beginning of the nineteenth century, and especially the Kentucky Revival started by the Presbyterians, the Shakers gathered so large a following that some European travelers expressed the opinion that they would overrun the United States and obliterate all other forms of religion.

REFERENCES.

1. *New America,* 1867, p. 325.
2. Evans, F. W.: Shakers and Shakerism, in Biography, fourth edition, p. 122.
3. Lombroso: *Man of Genius,* p. 40.
4. Mosheim: See Rev. xii, p. 40.
5. Evans: *Ibid.*
6. Dixon: *New America,* p. 323.
7. Evans, F. W.: p. 123.
8. All quotations not otherwise credited are from Ann Lee's biography by Evans.
9. Ida C.: Heavenly Bridegrooms, introduction by Theo. Schroeder. Reprinted from *Alienist and Neurologist,* 1915 to 1917.
10. Evans: p. 128.
11. For a detailed description of similar manifestations in negro revival meetings, see my *Revivals, Sex, and Holy Ghost, J. of Abnormal Psych.,* xiv, 34-37, April-July, 1919.
12. Biog., p. 146.
13. Samuel vii: 14, 20, 22.
14. Marshall, Mary: Extracted from *The Rise and Progress of the Serpent from the Garden of Eden to the Present day.*
15. *Ibid,* p. 19.
16. A compendious narrative, elucidating the character, disposition, and conduct of Mary Dyer, by her husband.

Mental States Associated with Apoplexy and Allied Conditions*

(Reviewing Fifty Cases)

By ALBERT C. BUCKLEY,
Philadelphia.

In an analysis of any complex of symptoms referable to the nervous system, it may be found convenient to regard the functions of the individual as constituting two component biological groups: 1, those functions referable to the organ of adjustment—the nervous mechanism, including the voluntary or cerebrospinal and the involuntary or autonomic nervous system; 2, the soma or nonnervous portions of the organism, including the visceral, muscular, glandular and vascular mechanisms. With such a functional division of the organism in mind, it may be stated at the outstart that the pathological processes and the functional defects associated with cerebral apoplexy are of somatic origin, as contrasted with disease or defect of neuronic origin, and dependent upon primary degenerative changes in nervous structures.

Apoplexy, clinically, is a symptom which is the outcome of an accident arising on account of changes in the vascular mechanism, most frequently in the vessels supplying the cerebral masses, and therefore is not to be regarded as an effect of primary nervous disease.

From the diagnostic point of view, the actual mental condition of the patient not infrequently can be regarded as of secondary importance. As a matter of fact, this is no less likely to be the case in regard to apoplexy than with any type of mental disorder not clearly an accompaniment of developmental neuronic defect or anomaly. Just as mental symptoms, arising as the indirect effect of default of some somatic function, such as renal, gastrointestinal or endocrine, or some other toxic disorder, are of the same clinical significance as fever, pain, vomiting or coma in pure bodily disease, so must a brain condition of the secondary character of apoplexy attract our attention as fundamentally a somatic affection.

It will be convenient to apply the data we possess, from the viewpoints of, 1, causal factors; 2, general symptomatology, and, 3, special symptoms in the form of mental disturbances.

There are many patients—in fact, the majority—who suffer from the pathological changes in the vascular mechanism necessary for the production of apoplectiform attacks, and who do not present at any time marked mental symptoms, if we do not take into account the initial states of stupor or mental clouding, which may be but transitory, during syncopal attacks, mild epileptiform attacks, and the socalled slight strokes.

CAUSAL FACTORS.

The question relative to the reason for the development of mental confusion, delusional states, and hallucinations of the senses in some patients, and their absence in others, before, during, or after the apoplectic attack, is always of interest from the point of view of each patient observed.

The first answer that is likely to come up refers to an anatomical query; that is to say, is the disordered mental state one of pure deprivation of former utilizable cerebral substance? In other words, how much of the capacity for cerebral function has been taken from the patient?

If the patient suffers a thrombosis occluding a large trunk such as that of the midcerebral artery, the bulk of the cortex of the corresponding hemisphere will be put out of commission. If this happens to occur in the left hemicerebrum of a right handed person there will be found, in addition to a motor loss (hemiplegia), considerable sensory loss (hemianesthesia), loss of articulate speech (motor aphasia), partial or complete word deafness, word and object blindness (sensory aphasia). In such a condition the patient (if he survives the initial shock and the immediate effects of the general circulatory disturbance in the entire cerebrum) will present symptoms that are chiefly the manifestation of a deficit due directly to deprivation of the use of those portions of the cortex affected. He would be unable to express thoughts in spoken language; he would be unable to recognize objects or written or printed characters. He would therefore be unable to make himself understood, and unable to comprehend spoken or written language, and would therefore be practically cut off mentally from the external world. If the motor area should have escaped and the arm is not paralyzed, the patient may be unable to write (agraphia) and may be unable to reproduce the movements necessary for the performance of certain acts (apraxia), as in the use of a pencil, a key, or other objects the uses of which were formerly familiar to the patient. Emotional speech, as contrasted with mental speech, may be preserved partially, as may be noted in the patient's utterances in the form of ejaculatory speech and in the use of expletives under emotional stress.

Furthermore, if this vascular accident has occurred in a cerebrum in which the cortical vascular supply has become generally curtailed by reason of diffuse arterial sclerotic disease, there may be, in addition to the above mentioned deprivation symptoms, a general mental reduction accompanying or following the apoplexy, and yet not wholly dependent upon it. In four of the patients whose clinical data are here reviewed four were aphasic and one was aphasic and apractic. In extensive lesions there is almost always a motor loss in the form of a paralysis, more commonly onesided, the result of the invasion of the motor territory in front of the fissure of Rolando, giving rise to a certain amount of paralytic speech defect (dysarthria) that must be differentiated from aphasia, which is a mental defect. Lesions involving sensory areas of the cortex, or the pathways leading therefrom, are more likely to be accompanied by mental symptoms, except those immediately following the seizure, such as stupor and confusion, which arise as the effect of the general cerebral commotion, such as would occur with traumatism.

---

*Read at a meeting of the Philadelphia Clinical Association, December 6, 1920.

Next, to involvement of sensory areas, those lesions which include the association areas are likely to give rise to mental disturbance. The association areas and their pathways are regarded as the regions in which fusion of the products of sensory stimulation of the cortex occurs. Two thirds of the brain cortex is occupied by the association areas; in other words, they comprise all of the remaining cortex which is not purely motor or purely sensory. In fact, the association processes constitute the all-important function of the cerebrum as a whole organ.

Lesions which interrupt the conduction or association pathways are most likely to give rise to mental symptoms; that is, an inability to fuse and further elaborate component sensory and motor impressions.

Just here it will probably be well to emphasize the fact that the doctrine of cortical localization must not be applied too literally in our use of the terms impressions and centres, when we are discussing pure mental functions. These processes are not located in any particular region of the cortex, but arise as the result of the functions of the cortex as a whole.

Many of the lesions, however, are not cortical; that is, they may be located somewhere in the subcortical white matter of the cerebrum, or in or about the basal ganglia, especially in the distribution of the lenticulostriate artery supplying the internal capsule, lenticular and caudate nuclei, and the optic thalami. These lesions produce the many combined symptoms, including motor, sensory, emotional and speech disturbances (aphasia), and comprise the majority of vascular accidents known as the middle cerebral type—the lenticulostriate artery being a branch of the midcerebral artery.

Lesions arising out of hemorrhage or thrombosis of the anterior cerebral arterial distribution may result in severe mental defect. In one in the present group of cases there were multiple lacunar hemorrhages in the white matter. In lesions involving the bulk of the thalamus there occurs, in addition to cutting off deep sensibility with a loss of the postural sense, an excessive reaction to painful stimuli, and excessive emotional reactions to other stimuli. Ordinary auditory stimuli may give rise to unpleasant emotional states.

Passing from the subject of extensive cerebral lesions, it should be noted that some patients suffer apoplectic attacks which by clinical examination are found to be the accompaniment of lesions limited to comparatively small cortical areas, or subcortical regions, and yet give rise to or are followed by decided mental disturbance.

This may be explained in two ways: Some patients are able to get on comfortably with considerable localized injury to the brain substance, probably because of the vicarious assumption of function by some other region of the cortex; other patients are mentally affected by comparatively small lesions.

This probably means that these hypersensitive persons are strongly predisposed by virtue of an inherent instability arising because of the lack of ability on the part of other intact regions of the cortex to assume the lost function. This inherent defect which constitutes predisposition, enters in many instances as a very important second etiological factor, particularly from the viewpoint of the genesis of mental symptoms.

Finally, mental symptoms arise in patients who suffer apoplectiform attacks in which there is transitory hemiplegic motor loss. With the exception of gross brain syphilis, resulting in gummatous, meningitic or vascular disease, such apoplectiform seizures cannot be explained except as toxic, as in uremia, or upon the basis of an angiospasm producing transitory anemia more or less localized in the cortical vascular supply, or to a transudation from overdistended vessels, the socalled serous apoplexy. There is no question that in arteriosclerotics small hemorrhages or thromboses near the motor or sensory areas, but not in them, may give rise to motor or sensory symptoms which are transitory.

Finally, there is a serious mental and nervous disease in which in some instances an apoplectiform attack may be the first symptom to attract attention; the disease is paresis, which must be excluded in making the diagnosis.

Symptoms.—The mental symptoms associated with apoplexy and allied states may be considered as: 1, the preapoplectic; 2, those of the seizure or stroke, and, 3, the postapoplectic or residual symptoms.

1. The preapoplectic symptoms are those of the condition responsible for the apoplexy. These symptoms are therefore not apoplectic until there has occurred an actual stroke, although they are of sufficient importance to demand attention, particularly from the standpoint of prognosis. They may be the mental symptoms of a gradually progressing diffuse arteriosclerosis affecting the cerebral cortical distribution. In such cases mental symptoms without focal symptoms are of slow development. In some instances the mental change is so slow in its progress that it is not until some marked mental symptom appears that the patient's relatives realize the situation; in fifteen cases observed in this group the onset was of this type.

Not infrequently there is a prodromal period during which the patient complains of the symptoms of cerebral circulatory disturbance, such as headaches, dizziness, visual disturbances of transitory nature, tinnitus or deafness. General nervousness, restlessness, somnolence during the day when the patient is sitting up, and wakefulness when recumbent, mental irritability, lack of capacity for mental work, and the characteristic disinclination of the patient to become interested in new matters, are the conspicuous signs of approaching mental disorganization.

Often the patient realizes that he is losing his former ability to grasp new situations, that his mental capacity is diminishing, and his memory failing. The general symptoms are similar to those of neurasthenia in younger subjects. In some instances there is profound depression of spirits with a marked feeling of incapacity and a suicidal tendency; this was present in nine patients in the group reviewed.

The more marked mental symptoms may be transitory. The gradually increasing physical and mental enfeeblement may be accentuated by attacks of excitement, depression, confusion, or even a distinct delusive trend. The confusional attacks resemble delirium, or the confusional attacks seen in younger subjects, and are doubtless due to a superadded toxic state such as uremia. Distinct confusion attacks were observed in five patients in the group. Arteriosclerotic patients who have been habitual users of alcohol seem to lose their tolerance, shown by the prompt appearance of excessive irritability or even mental confusion after taking moderate amounts of stimulant.

Physically, in the absence of definitely localizing symptoms, it not infrequently happens that there is an increasing stiffness of gait, more marked on one side, and some awkwardness shown when the patient attempts to make the more finely coordinated movements, such as buttoning the clothing or in writing. Some patients exhibit a strong tendency to lean to one side, or to sway to one side when walking, due to involvement by contiguity of the motor area of one side of the cerebrum with an area which may have been the seat of a small lesion.

Mental symptoms.—The pure mental symptoms may be: 1, sensory, that is, perceptive; 2, they may be emotional, that is, affecting the motor component or accompaniments of emotional states, either accentuated or diminished; 3, they may be intellectual, a convenient term for expressing the function of the cerebrum as a whole in the elaboration of simpler mental states into compounds.

The disturbances of perception are more likely to be due to insufficient perception, giving rise to faulty interpretation of facts. True hallucinations of the senses are not common; they were noted in four patients. Lesions in or near a sensory region of the cortex may result in hallucinations as occurred in a patient who suffered an incomplete hemiplegia with onesided blindness (hemianopsia), who saw hallucinatory images in the blind field, and another patient with a rightsided hemiplegia with astereognosis (the inability to recognize objects by touch), who heard the voice of a man in her head.

Emotional disorders are conspicuous, being marked in thirty-eight patients. Emotional responses may be delayed on account of the patient's slowness to apprehend situations. Frequently one notices ill-timed laughter or weeping under real emotional stress. This is always of a spasmodic character and not under the patient's control, as is true of swearing, which is emotional speech and not intellectual. Anxiety and a fear of being alone are common signs of emotional depression.

Memory defects are among the most prominent of the indications of mental disorganization, and were found early in practically all patients. Defects involving recent events are more defective than for happenings in the remote past, due to defective impressibility rather than a lack of retentive power. In some cases this is so striking that the patient seems to be living in the past, and on account of his inability to make his daily experiences fit with his memories of his earlier life, he is more or less constantly out of harmony with his surroundings.

He is commonly disoriented as to time and place; turns night into day; gets up and dresses to go out in the middle of the night; feels that he is away from home; wants to go to see his parents who have been dead many years; speaks of his children as his brothers and sisters. He forgets familiar faces, due to his failing impressibility of memory, and, therefore, thinks that he is among strangers.

Attentive power is enfeebled, as was the case in most of these patients. He can readily be diverted from a topic and led into new fields, only to be again distracted by some environmental accidental happening, as of someone entering the room. As noted above, defective attentive power contributes to the memory defect.

Train of thought is disconnected and more or less controlled by accidental stimuli rather than by any direction on the part of the patient. This is shown by the patient's rambling speech and failure to incorporate actual experiences into a coherent stream of ideas.

Judgment is practically always more or less impaired. This defect may arise out of the disturbed emotional disorder, and may be expressed in terms of fear and anxiety, or a persecutory trend of delusion may appear, commonly in regard to the patient's nearest of kin who may be acting as caretakers. Four patients gave evidence of definite delusions, while in the majority judgment defects could be attributed to error. He may insist that his food is poisoned; that his property is being taken from him. The latter idea, which is very frequently heard expressed by patients of this class, arises out of the memory defect, which forces the patient to think in terms of the remote past, and, naturally, objects long ago familiar are not likely to be found.

More rarely there develops a distinctly expansive delusional state with ideas of grandeur. A patient now under my care regards himself as the president of a railroad, and takes pleasure in issuing passes. As time goes on the delusions usually fade gradually with the advance in the progress of the degenerative changes in the cerebral substance, or may be suddenly wiped out by the onset of an apoplexy which gives rise to an increased mental clouding.

The apoplectic symptoms may be regarded as those which are premonitory and those which are the immediate accompaniments of the vascular accident, which may be either hemorrhagic or thrombotic. Mental irritability, peevishness, depression or confusion, or stupor, is sometimes present for a few days before the stroke; transitory losses of consciousness are suggestive of small hemorrhages or momentary blocking of cortical vessels. Gradually progressing mental dullness may be the accompaniment of the gradual blocking of one of the larger branches of the midcerebral artery or a slowly progressing hemorrhage. Physical signs in the form of paralyses are more often present than absent. Rarely, as in a case observed at autopsy, there were found nine well defined hemorrhages in the white matter extending from the frontal poles of the brain to the cerebellum at irregular intervals. None of the hemorrhages involved the motor area or pathways, hence there were no paralytic signs. The only symptoms were mental, that is, progressing mental enfeeblement advancing rapidly and increasing by large increments until the patient died in coma. As a matter of fact, mental symptoms of the actual apoplectic period are not marked as a rule, nor are they of great variety. They are usually limited to varying degrees of mental clouding and the consequent confusion.

Occasionally one meets with a delirious state accompanying an apoplectic attack with a partial hemiplegia, that is, a paralysis of one arm and part of the face of one side, with partial paralysis of the leg of the same side. In such deliria there is marked mental confusion; a lack of ability of the patient to comprehend his surroundings; there is marked motor restlessness; the patient is kept in bed with difficulty. He struggles aimlessly in spite of his hemiplegic weakness, and resists feeding, bathing, and other necessary attention, because of his inability to understand the motives of those in attendance.

The postapoplectic state presents a variety of mental states which depends upon the amount of deprivation of cerebral substance and also the degree of general cerebral arteriosclerosis, and the degree of general toxicity which arises as the result of the visceral degeneration which accompanies the systemic or somatic arterial disease. To the symptoms already described in the preapoplectic period there are added particular episodes of mental irritability, clouding and confusion; mental activity is actually diminished, and speech may be reduced to a few sentences without the characteristics of aphasia.

Physically, these patients seem vigorous; they are active and restless. Their movements are aimless; they are busy carrying small pieces of furniture about; if in bed they twist or fold the bed clothing. In not a few cases there is distinct motor and sensory aphasia which adds to the mental confusion and prevents the patient from making himself understood.

As the disease advances and new areas of softening occur, the mental and physical disintegration advances until the patient is totally helpless on account of his paralysis, which may now involve both sides of the body, and, mentally, he has no capacity for thought.

In a few instances postapoplectic confusion and irritability may disappear with the general improvement of the patient physically. This mental recovery occurs in thrombotic apoplexies in patients who show by the general improvement and the return of power in the palsied members that the vessel blocked was a small one, and that circulatory supply has been reestablished. Three patients in the group recovered from the clouded mental state, one carrying a residual motor aphasia, though otherwise, as far as was determined, he seemed mentally clear.

FRIENDS HOSPITAL, FRANKFORD.

The Effect of Tobacco on Man

By WILLIAM J. GIES, D.Sc.,
New York;
Professor of Biological Chemistry, Schools of Medicine and Dentistry, Columbia University,
MAX KAHN, M. D.,
New York,
Associate in Biological Chemistry, College of Physicians and Surgeons; Attending Physician, Diseases of Metabolism, Beth Israel Hospital,
and
O. VICTOR LIMERICK, M. D.,
New York.
Director Department of Pharmacology, Brooklyn Diagnostic Institute.

Nothing is more degrading in its consequences than a willingness to accept as true that which will not bear dispassionate investigation. The truth of this assertion is strikingly evidenced by the extreme bitterness which still exists between some of those who hold diametrically opposite opinions regarding the effects of tobacco on the human organism. Indeed, the effect of tobacco on man will continue to be a debatable subject just so long as this animosity causes the evidence adduced by the opposing sides to the controversy to remain qualitatively below the requirements of those most competent to render a decision that will be accepted as conclusive by the majority of enlightened persons.

An honest difference of opinion can only arise from one or both of two causes—from an emotional force that is stronger than the individual's capacity to reason from cause to effect, or from some defect in the mental functions by which trained men correctly interpret observed phenomena. The emotionalist is prone to fall into error because of his or her inability to differentiate between a fallacy and a fact; the scientist usually escapes error because he is habitually disposed to withhold decision until he has taken recourse to the most rigid methods of verification. The emotionalist stops at speculation; the scientist converges facts to a logical conclusion. It follows from this that such conclusions as are arrived at by those specially trained in scientific investigation are deserving of more consideration than is the mass of testimony that may be adduced by those who embrace the socalled tobacco question in response to an overwhelming emotional impulse.

THE ACTION OF TOBACCO.

Inasmuch as the question engaging attention relates solely to the possible evil effects of the habitual use of tobacco, it will not be necessary to dwell at length on acute tobaccoism, such as usually results from the first use of the plant. This acute intoxication, which is characterized by such familiar symptoms as vascular disturbance, muscular relaxation, diaphoresis, cephalalgia and vertigo, is of interest to scientists chiefly because of the unparalleled rapidity with which it is followed by a tolerance to larger and frequently repeated doses of tobacco. These symptoms seldom recur after the specific antidotal mechanism of the body has once been set in operation.

As used by those habituated to the plant, the effect of tobacco is chiefly confined to the vascular and psychic mechanisms. The immediate effect is a moderate but temporary rise in blood pressure and an increase in the power of concentration, in consequence of a better adjustment of the ego to its environment. The rise in blood pressure, which is so frequently stressed by those laymen who condemn the use of tobacco, does not exceed in degree or duration that which ordinarily follows a cold bath or sponge; it rarely ever equals that caused by such wholesome pastimes as dancing. The effect of tobacco on the vascular and psychic mechanisms is due to the conjunctive action of nicotine, pyridine, collidine, aldehydes and carbon monoxide; it is not possible to bring about the same reactions by introducing any one or two of these substances into the organism. Nevertheless, it is certain that nicotine does play the most important rôle in provoking tobacco reactions. And it is also certain that the other constituents of the plant or its smoke—especially quinoline, hydrocyanic acid, ammonia and volatile oils—are not present in sufficient quantity to play any part whatever in its action. These latter constituents are, in fact, present in equal or greater quantity in many other members of the vegetable kingdom that are commonly used by juveniles in the manufacture of makebelieve cigarettes.

The sequence of the potency of the different forms in which tobacco is generally used runs as follows, in the order of greatest degree to least: Chewing, smoking pipe, smoking cigar, smoking cigarette.

It can thus be seen that, contrary to the prevailing belief among laymen, the cigarette is in fact the least harmful form in which it is possible to habitually use tobacco. There is not the slightest foundation for the popular notion that the paper or the tobacco used in the manufacture of the cigarette contains any substance that is especially injurious to the human organism. Emphasis on the relative innocuousness of the cigarette is deemed justified by the persistence with which the misinformed strive to convey a contrary impression. It is equally deserving of mention that an analysis of tobacco does not indicate with any degree of preciseness the actual toxicity of, say, a cigar or a cigarette made of it, for a great part of the volatile constituents of the plant is completely destroyed in the burning, hence does not enter the body.

Development of tolerance to tobacco does not necessarily imply consequent or concomitant injury. Similar adaptability to the action of the toxic products of intestinal putrefaction, for example, is a physiological defensive measure. The phenomena of tolerance to tobacco imply defensive adaptability to the effects of the plant—a fact that tends to explain the absence of deleterious effects in the many who habitually use tobacco in excess. In every case of habituation to tobacco there is an actual decrease in the protoplasmic sensitiveness to nicotine. It is manifest that many of those who find it difficult to believe that the habitual use of a toxic plant, such as tobacco, need not necessarily be harmful in its effects, are unacquainted with the force of the defensive mechanisms of the body. Every trait of the human species has a double history—that of the race and that of the individual. The tolerance to tobacco is partly inherited and partly acquired; a tolerance acquired by a member of a race is transmitted, in some degree, to the progeny of that member. Parallels to this are familiar to every student of immunology. It is certain that the tobacco habit is preserved, in some degree, through selection; that is to say, the easily acquired fondness for tobacco is, in some degree, a consequence of ancestral pleasures derived from its use.

THE GENESIS OF THE TOBACCO HABIT.

That which persistently tends to exist presumptively has a valid basis. We invariably find on investigation that Nature is justified in what it repeatedly expresses in the form of an impulse. Confirmation of this is found in the visits of the shyest of wild animals to the barnyard salt licks. It would be a violation of the scientific spirit to regard the tobacco habit as a vice if we do not know why it exists or that it is, in fact, injurious. We cannot deal intelligently with a problem unless we understand the condition or conditions that cause that particular problem to exist.

Civilized man does not live in a state of nature. The conditions of his life are artificial; they are of a kind that imposes an ever increasing stress on his adaptive mechanism. He is still evolving from a creature of brawn into one of brain. He is constantly struggling to adjust himself to a vacillating environment. Every new industry and every new invention alters the external conditions of his life, involves new complexities of his vocation and adds to his psychic tension. The brain becomes more active than the body in exact proportion to the increase in expanse between primitive and civilized man. The stress burdens on the nervous mechanism of civilized man are constantly increasing in kind and number. Exciting vocations and avocations and top speed habits of earning a livelihood place a severe tax on the organism of civilized man. Added to these are the emotional stresses, enmities and jealousies resulting from domestic or industrial relations.

Man learned by chance that tobacco (after having once set in operation the specific antidotal mechanism of the body) gives rise to certain pleasurable sensations; that it allays restlessness, tranquilizes emotional inquietude and fosters repose. Profiting by experience, he in time came to resort to tobacco whenever he felt the need of relief from physical or emotional strain. The smoking impulse, or craving for tobacco, is merely the expression of the need of the organism, artificially environed, for something that does not increase the store of energy —something that is not food. It is an impulse acquired under the influence of selective palliation. It varies in intensity and frequency of recurrence, according to the degree of individual ill adjustment to environment. It is, as a rule, moderate in those fairly well adjusted to external conditions of life, and immoderate in those less fortunately circumstanced. It attains its peak at the moment the psychic mechanism is exposed to greatest tension. Those engaged in intellectual pursuits or other forms of mental stress are most likely to feel the need of tobacco; excessive tobacco smoking is rare in the servile. After breaking the habit of tobacco smoking, the desire for the plant does not have any of the cumulative physiological force of the specific craving for such habit drugs as morphine. The habituation is developed and continued despite the action of nicotine, not because of it. The withdrawal symptoms are not like those exhibited by ordinary drug addicts; the tobacco habit is not a drug habit in the sense in which the term is commonly understood.

Primitive man was exposed at night to the greatest danger of attack by enemies. In consequence, present day man has an instinctive dread of darkness; the child's fear of darkness is inherited. Hence it is that a starlit sky excites pleasurable sensations, the more timorous rest best when a dim light is kept in the sleeping room, and food invariably tastes less palatable in darkness. But even when due allowance is made for the psychic effect of light exclusion, smoking in the dark does not afford a full measure of enjoyment to those habituated to tobacco. This fact lends emphasis to the validity of the psychic factor in the tobacco habit, and tends to show that the craving is chiefly a demand for the satisfaction of a psychic impulse, not for the specific effect of nicotine or of anything in tobacco smoke. Moreover, the failure of substitutes for tobacco to satisfy the craving for this particular plant suggests that its taste and aroma, and perhaps the local effects of smoke, are directly involved in its attractiveness. But this aspect of the attraction involves only superficial physiological influences, and the toxic effects of tobacco embraced in this phase of the hold on the user of the plant are relatively slight and only local at most. Although the psychic factor is unquestionably the most important one in tobacco smoking, it certainly is not the only one, for it was conclusively demonstrated during the world war that cigarettes made wholly or in part of other plants do not exercise a tranquillizing influence on tobacco smokers nor satisfy their acquired fondness for mild forms of tobacco.

NICOTINE.

It is significant that no constant relation exists between the amount of pleasure derivable from a given specimen of tobacco and its nioctine content or the extent of any consequent physiological effect. The preference of the tobacco smoker does not persist in the direction of tobacco containing the greatest amount of nicotine. Statistics prove that the common drift of tobacco smokers is toward the mildest form of tobacco—from the cigar to the cigarette. This voluntary drift toward the less potent is the exact reverse of what is characteristic of drug addicts. It can thus be seen that tobacco, whether mild or strong, does aid in the adjustment of the ego to its environment, and it is obvious that it does so through its action on the psychic and adrenal mechanisms.

TOBACCO AND MENTAL DISORDERS.

Tobacco does not cause disease of either mind or body. It has been asserted by some that the immoderate use of the plant bears a causal relation to arteriosclerosis, but no one has yet presented proof that it does; the theory on which the assertion rests is implausible. The condition commonly termed smoker's heart is often due to endocarditis associated with gonorrhea, syphilis, rheumatism, tonsilitis, pyorrhea alveolaris, dental abscesses, and other causes.

It may be urged that, since it is certain that the exessive use of tobacco does occasionally affect the vascular system and neuromuscular coordination, the plant must necessarily be an economic menace. The answer to this possible contention is quite simple: a thing is an economic asset or liability, according to the sum of its effect on the race. It is conceded that education is by far the greatest of all economic assets. Education has been acquired at the expense of some visual impairment: the eye strain incident to reading the printed word has made it necessary for many to resort to glasses in order to correct the optical ill adjustment. Again, ill adjustment to the erect posture makes it necessary for many persons to wear a truss. The right minded do not advocate closing the schools nor do they oppose the manufacture of trusses. Others may contend that the attractiveness of tobacco for the female sex constitutes a menace to future generations.

USE OF TOBACCO BY WOMEN.

Tobacco has no special attractiveness for the female of the species. The specific antidotal mechanism of the body to tobacco will continue greatest on the male side in conformity with hereditary forces. It is the males of all the races of the earth that exhibit the greatest fondness for tobacco. The same impulse that caused some women of yesteryear to wear the deforming corset and others of today to expose their legs to wintry winds will prompt a few to affect a fondness for tobacco until another and more fetching stratagem of sex attraction has been thought of.

CONCLUSIONS.

The habitually moderate use of tobacco is not harmful to adults.

The moderate use of tobacco proves distinctly helpful to certain adult types.

The habitually excessive use of tobacco may prove harmful to certain individuals. But the same holds equally true of all foods.

The excessive use of tobacco may prove harmful in certain neurovascular disorders.

The habitual use of tobacco by juveniles is harmful.

437 West Fifty-ninth Street.
140 West Sixty-ninth Street.
550 Riverside Drive.

Ataxic Paraplegia with Pernicious Anemia

By KARL A. MENNINGER, M. S., M. D.,
Topeka, Kan.

Spinal cord and brain changes accompanying pernicious anemia are well established symptoms of that disease. In the original description of pernicious anemia Addison (1) remarked that the "mind occasionally wanders," and detailed study of the mental symptoms accompanying pernicious anemia have been made in the last few years by Barrett (2), Lurie and Jones (3) and Raphael (4). The spinal cord changes were first noticed by Lichtenstern in 1884, who wrote an article entitled Progressive Pernicious Anemia in Tabetics (5). But of course he misinterpreted his findings. Two years later Lichtheim (6) recognized the true significance of the picture. Since then many authors have described spinal cord changes. One of the best recent articles is by Woltman (7) of the Mayo Clinic.

It is fairly well agreed that the spinal cord changes and the bone marrow changes, i. e., the anemia, are the result of the same poison and not caused the one by the other.

There has been much discussion as to the relative frequency of spinal cord changes as compared to the blood changes, and all sorts of figures have been given by various authors as to this relation. Those of Woltman (7) and Cabot (8) are the highest, rating about 80 per cent. Some authors give it as low as two and eight tenths per cent. (Bramwell) (9) or eleven and seven tenths per cent. (Nonne) (10). As a matter of fact, the differences are largely due in all probability to the amount of attention given to the neurological and psychiatrical symptoms. These have always been rather neglected by general medical men and internists. It is not improbable that eighty per cent. of all cases of pernicious anemia can be shown to have some neurological symptoms or signs.

Most interesting are those cases in which the symptoms of spinal cord disease are more conspicuous than the blood symptoms. They sometimes antedate the anemia. One eighth of Woltman's cases came for the express purpose of seeking relief from nervous system symptoms. Two of his 150 cases showed neurological signs before anemic signs. This is then a distinctly unusual phenomenon, as pointed out by Nonne (10) and Bastianelli (11). The following case is another one of this sort. It is reported because of this unusual fact and because of the social complications which might have arisen from erroneously regarding the case as one of tabes dorsalis.

Case. — C., a banker, aged sixty-two, born in Maine. His past history was entirely negative except that he had had stomach trouble a good deal and was always constipated. He had had typhoid fever at twenty-two. His wife was a healthy woman. There was one living child, and one died at ten months of stomach trouble; no miscarriages. One important fact to be emphasized is that at the age of twenty-two there developed what he supposed to be syphilis, an eruption which left stains on his skin and later sores on his arms and legs which left scars.

At the age of fifty-five he noticed a numbness in his feet and hands which began insidiously and which was ignored for some time. He walked just as well as ever and had no other complaints of any kind. Five years later the numbness had progressed so that it involved most of his feet and legs, hands and arms. It annoyed him a little, but he had given no thought to it until one morning he had a severe pain in his back. It was diagnosed as lumbago and was so severe he was unable to leave his bed. It lasted only a few days, however, and this is all the pain he had ever had. From that time on there was an increasing difficulty in walking, especially in the dark. It did not really become severe until a year after the socalled lumbago. (In view of the subsequent history this socalled lumbago was probably an acute myeloradiculitis.)

The legs were tender and continued to be numb but were at no time painful. At times a girdle sense about the waist such as is typical in spinal cord degenerations was present. This was noticed particularly when his bowels moved and in cold weather.

Ordinarily he was very constipated, but twice within the past two months he has had involuntary bowel movements. There have also been some urinary difficulties both in starting the flow and with dribbling.

He was first noticed to be somewhat pale two years ago (five years after the numbness was first noticed). Blood examinations were first made six years after the onset of the trouble and showed a moderate anemia, the red count being in the neighborhood of 2,500,000 and the hemoglobin proportionately reduced. The disease was diagnosed as locomotor ataxia with anemia, the same mistake that Lichtenstern made nearly fifty years before. In the past year he has had several more blood counts which showed his red count steadily falling, although even at the present time the only symptom referable to his anemia of which he complained was his susceptibility to cold. He has had no sore tongue, no dyspnea, no feeling of weakness, or other similar signs.

The physical examination showed a short, well nourished, gray haired man with a thin, glossy, pallid, yellowish skin. The heart was somewhat enlarged, the apex being in the fifth space, three cm. to the left of the midclavicular line. There was a slight edema of the ankles. The shins were rough and pigmented scars were present over both. Systolic blood pressure was 108, diastolic 60. Except as noted, the physical examination was negative.

A careful neurological examination was made with the following positive findings: Ophthalmoscopic examination revealed dirty yellow disks with pallid temporal thirds. Pupils reacted rather slowly to light but were less abnormal than many senile pupils.

All other cerebral nerves normal. Tendon reflexes upper and lower extremities exaggerated but equal on the two sides. Abdominal reflexes absent. Cremasteric reflexes absent on the right, present on the left. Babinski, Oppenheim, Shaefer, etc., markedly positive on the right, absent on the left. Epicritic sensation slightly diminished, especially over the right thigh and leg. Position sense very poor; joint sense, especially of toes, almost entirely lost so that he could not tell flexion from extension or abduction. Stereognosis poor; e. g., he called a silver dollar a piece of soap. Coordination of the arms poor, especially of the right side; of the legs, very poor, especially of the right. Romberg strongly positive; walking the chalk line was impossible. His gait was a combination of ataxia and spasticity. He gave the impression of a man trying to walk on thin ice. Dysmetria of feet marked, of hands less marked. Barrè's pyramidal tract lesion test strongly positive, especially in the right leg.

Blood examination (*typical example*):
  Hemoglobin, 40 per cent.
  Red blood cells, 940,000; white blood cells, 3,000.
  Differential count:
    Neutrophiles, 55 per cent.
    Small and large lymphocytes, 30 per cent.
    Myelocytes, 4 per cent.
    Basophyles, 0.5.
    Nucleated reds.
    Microcytes and macrocytes and poikilocytes, numerous.
    Platelets, very few.
    Color index, 2.
    Coagulation time, one minute.
Uranalysis:
    Specific gravity, 1.020.
    Reaction, acid.
    Albumin, 2 plus.
    Sugar and indican, absent.
    The microscopic examination showed hyalin casts, granular casts, pus, and a few blood cells.

The spinal fluid examination showed the pressure normal, cell count normal. Globulin present in slight traces. Wassermann negative, gold sol negative. The spinal fluid was examined in three different laboratories. A diagnosis of ataxic paraplegia (combined system disease) with pernicious anemia was made. A relatively favorable prognosis as to life was given the patient since progress of the anemia as well as the spinal cord changes were very slow.

The treatment consisted of the usual medicinal attack on the anemia (arsenic and iron) and the employment of hydrotherapy, massage and reeducational exercises (Frenkel, Maloney). For the spinal cord symptoms it was a gratifying and interesting surprise that hydrotherapy proved of immediate benefit. To the patient the warming of the usual chilly extremities that other usual appliances had failed to do was most pleasing. The thermostatic controlled continuous bath of the ordinary sort was used with the water at 97° F.

REFERENCES.

1. ADDISON: *The Constitutional and Local Effects of Disease of the Suprarenal Capsules.* London, 1855.

2. BARRETT, A. M.: Mental Disorders and Cerebral Lesions Associated with Pernicious Anemia, *American Journal of Insanity,* 69, 1063, 1913; Mental Disorders Associated with Pernicious Anemia, *Fifth Biennial Report of State Psychopathic Hospital,* Ann Arbor, Mich. (biennial period ending June 30, 1916).

3. LURIE, L. A., and JONES, BERTRAND L.: Differential Diagnostic Difficulties in Pernicious Anemia with Associated Mental Disorder, *Archives of Neurology and Psychiatry,* vol. iv, July, 1920.

4. RAPHAEL, THEOPHILE: *Archives of Neurology and Psychiatry,* vol. iv, July, 1920.

5. LICHTENSTERN, O.: Progressive perniciöse Anämie bei Tabeskranken, *Deutsch. med. Wochnschr.,* 1884, x, 849. And other references.

6. LICHTHEIM: Zur Kenntniss der perniciosen anæmie, *Verhandl. d. Cong. f. inn. med.* 1887, 84.

7. WOLTMAN, H. W.: *The Nervous Symptoms of Pernicious Anemia—An Analysis of One Hundred and Fifty Cases.* Reprinted from *American Journal of Medical Sciences,* 1919, clvii, 400-409. Lea & Febiger, Philadelphia.

8. Quoted by *idem.*

9. BRAMWELL, B.: On the Association of Pernicious Anemia with Subacute Combined Degeneration of the Spinal Cord, *Edinburgh Medical Journal,* 1915, xiv, 260. And other references.

10. NONNE, M.: Weitere Beiträge zur Kenntniss der im Verlaufe letaler Anämien beobachteten Spinalerkrankungen, *Deutsch. Zeitschr. f. Nervenh.,* 1894-1895, vi, 313.

Ruckenmarksveränderungen in Fällen von perniciöser Anämie, von Sepsis und von Senium nebst Bemerkungen, *Deutsch. Ztschr. f. Nervenh.,* xiv, 1899.

Syphilis of the Lungs Simulating Tuberculosis

By HENRY M. MINTON, M.D.,
Philadelphia,
Dispensary Physician, Henry Phipps Institute of the University of Pennsylvania; Physician to the Mercy Hospital.

Syphilis of the lungs is considered a very rare condition, especially that of the acquired type. This latter type manifests itself in three forms; diffused gummata, fibroid induration originating usually at the hilus of the lung, and consolidation and catarrh. The last form may occur at the root of the lung or at the apex (1).

In 1915 H. R. M. Landis and Paul A. Lewis, of the Henry Phipps Institute, called attention to the fact that latent syphilis of the apex of the lung was probably more frequent than usually regarded (2). They reported five cases which had come under their notice, each having many physical signs and symptoms of tuberculosis, except that the tubercle bacillus was absent from the sputum. These cases had been treated as tuberculosis without permanent improvement. Positive Wassermann reactions were afterwards obtained and after antisyphilitic treatment the symptoms in each case were entirely relieved.

In the one clinic of the Phipps Institute which has been under my care, I have noted cases which to the casual observer might have been diagnosed as pulmonary tuberculosis, but, after investigation, have proved to be syphilis of the lungs. For illustration I have selected three typical cases which, I feel, will show their character.

CASE I.—18950 Phipps Institute. In January 1919, a man, aged forty-three, unmarried, a railroad employee, was referred to us by a physician with a provisional diagnosis of pulmonary tuberculosis. This man had previously consulted another physician who also had made a diagnosis of tuberculosis. He gave a history of having had a cough for three years, most severe at night, with white sputum for the same length of time. He had occasionl hoarseness, but had never had blood tinged sputum or night sweats. He had had pain over the liver during this period. In 1915 he weighed 202 pounds, while his present weight was 161. As to his family history, his father died in 1887 of tuberculosis. He admitted an initial luetic lesion in 1892.

Examination of the heart showed the presence of a systolic murmur at the second cartilage on the right side, the second heart sound heard in that area being bell like.

Examination of the chest showed it to be well filled in, and expansion to be good and equal. Percussion gave an impaired note over the apex anteriorly and posteriorly. On auscultation bronchovesicular breathing was noted over this area in front, and slight bronchovesicular posteriorly. Increased vocal resonance was noted also over the right apex. The only râles noted were at the base of the right lower lobe. The sputum was negative.

The fact that this patient gave a positive history of an initial lesion, that he had a pain referred to the liver, a possible perihepatitis, that he had aortitis, made us suspicious that he was suffering from syphilis of the lungs and not pulmonary tuberculosis. It was requested that a Wassermann test be made, and the result was a four plus reaction.

For a period extending over a year he was given antisyphilitic treatment, consisting of injections of salvarsan at first, with internal medication of mercury and potassium iodide afterwards. As a result his cough has been relieved and his weight at the present time is 180 pounds.

CASE II.—No. 20751 Phipps Institute. A married woman, forty years of age, came to us about five months ago. Her family history showed that her father had died in 1910 of tuberculosis, and her maternal grandmother had died of a pulmonary hemorrhage. She gave a doubtful history of pleurisy, but denied having had syphilis. She had used alcohol excessively in former years. She stated that her husband suffered from headaches. Her chief complaint was a cough of four months duration, with a very large amount of white sputum. She had never had blood tinged sputum, but had had night sweats during this period. She had also had hoarseness and dyspnea, and her menses had been suppressed for four months until three weeks before, when she menstruated profusely for three days. A year and a half before the date of her entrance into the clinic she weighed 142 pounds, at this time she weighed eighty-nine pounds.

Examination of the chest showed it to be flat, with a moderate depression above the right clavicle. There was an impairment of resonance over the entire upper right lobe, and over the apex of the upper left lobe to the level of the second rib, anteriorly. Posteriorly there was impairment over both apices. Bronchovesicular breathing was heard over these areas, and a few râles were noted over the right apex in front, and over both apices in the back. The heart was negative. Her pulse was 104 and her temperature was 99.2°.

However, the sputum was negative as to tubercle bacilli, and a Wassermann was requested, which resulted in a four plus reaction. At the time of the next visit to the dispensary and before a report of the Wassermann had been received, the patient had been spitting blood tinged sputum, and was having sweats every night. She had lost one and a quarter pounds in weight.

After we were assured that she was suffering from lues, we advised the patient to take salvarsan injections in our syphilis department. On account of some prejudice to this form of treatment she refused to attend the genitourinary clinic, and would return to the institute only upon our promise that she would be treated by internal medication and not by injections. Consequently she was placed upon mercury and potassium iodide in graduated doses.

Until six weeks ago she came to the clinic regularly. For a period of two weeks during the time of her attendance she had no cough at all. The hemoptysis and the sweats were entirely relieved. She had just returned to the clinic with a moderate cough, but no blood spitting or sweats. She had, however, a continuous headache. Her weight at the time of her last visit was 124 pounds.

CASE III.—No. 18544. An unmarried man, thirty-five years of age, came to the clinic in 1918 with a history of having had a productive cough from time to time for the past five years. He had had dyspnea for two weeks, a poor appetite for the same length of time, with nausea and vomiting after meals.

His family history was negative, but he admitted having been an excessive user of alcohol until 1917. He had pneumonia and pleurisy in 1908, typhoid in 1889, influenza in 1917, and so-called stiff joints three and a half months before. He gave a doubtful history of a primary luetic lesion in 1918, the same year in which he came to the clinic. He had not had blood spitting or night sweats, but during the previous four months had lost thirty-nine pounds, his weight at this time being 86 pounds. His finger nails were slightly curved. There was some discrepancy between the history of a possible primary luetic lesion a few months previously and of a cough of five years' duration, if we were to presume that the cough was of syphilitic origin.

On inspection it was noted that he was poorly nourished and his chest was poorly developed. On the right side there was a moderate depression above the clavicle and flatness below. Expansion was poor during inspiration. Upon percussion an impairment of resonance was noted over the right apex, and a slight impairment over the left, anteriorly and posteriorly. Upon auscultation there was weak breathing over the entire lung, bronchovesicular in front over the apices, weak vesicular over the left apex and granular over the right apex posteriorly. Increased vocal resonance was noted over both apices, front and back. The sputum was negative, but the Wassermann test was four plus. Dr. Kaufman, of the Phipps Institute, has called my attention to the frequency of weak breathing in these cases which give positive Wassermann reactions.

Four months of antisyphilitic treatment, although irregularly given on account of the failure of the patient to put in appearance, modified favorably all of his symptoms. At the time of his last visit his cough had almost entirely disappeared and his weight had increased twenty-eight pounds.

Collectively, these patients gave all of the cardinal symptoms and signs of tuberculosis; prolonged cough, expectoration, blood tinged sputum, hoarseness, night sweats, dyspnea, gastric derangement, amenorrhea, marked loss of weight, curved nails, slight elevation of temperature and increased pulse rate, flat chest and unilateral lagging on respiration, together with impairment of resonance over the apices, bronchovesicular and granular breathing, increased vocal resonance and râles. Yet it seems satisfactorily proven by laboratory and therapeutic tests that their lesions were of syphilitic origin. It may occur to some that we were dealing with tuberculosis complicated by lues, and by a relief of the baneful influence of the latter disease upon the former, the condition of the patient was improved. However, it is more than probable that any case of tuberculosis giving the signs and symptoms recorded in these cases would produce tubercle bacilli in the sputum.

CONCLUSIONS.

The frequency with which these cases appear at the Phipps Institute causes us to conclude first, that syphilis of the apices of the lungs is not by any means a rare condition, and that there are many cases of this disease being treated for pulmonary tuberculosis. Second, that we should avail ourselves more frequently of Wassermann and other blood tests in private practice in cases giving signs and symptoms of active tuberculosis, but not giving positive sputum. This should be done whether a history of a primary luetic lesion is obtainable or not, realizing that syphilis is often innocently acquired. Signs of an aortitis, of a perihepatitis, of weak or suppressed breath sounds, should make us suspect syphilitic infection. By pursuing such a practice there is no doubt that we will arrest some cases which are running a rapidly downward course.

REFERENCES.

1. Norris and Landis: *Diseases of the Chest,* p. 493.
2. *American Journal of Medical Sciences,* August, 1915.

1130 South Eighteenth Street.

Encephalitis Lethargica as a Complication of Influenza

By BERNARD FRANKEL, M. D.,
New York.

Although almost every system of our organism is subject to attacks of influenza, the nervous system seems to be especially vulnerable in that respect; in fact, more or less serious nervous complications and sequelæ, such as inveterate headaches, insomnia, neuralgias and spasmodic affections, may follow even mild influenzal attacks of other systems. But sometimes the brunt of these attacks is directed toward the nervous system specifically, although other symptoms may precede or accompany them.

Thus during the 1916 epidemic of infantile paralysis, gastrointestinal symptoms often ushered in or accompanied the disease, but poliomyelitis leading to paralysis or even to a fatal termination was the predominant affection.

It still remains unexplained why at certain times and in some patients influenza should be mainly complicated by respiratory troubles such as grip and pneumonias, in others by gastrointestinal disturbances at times simulating even typhoid fever, while at others again by infantile paralysis or encephalitis lethargica. But this fact in itself was patent enough to every student of the epidemic during the past few years. In other words, it is evident that at some seasons streptococci, which are the infective agents of influenza (1), show a predilection for attacking the respiratory or digestive systems, while in others the nervous system seems to be the one so favored, with resulting complications of poliomyelitis, encephalitis lethargica and influenzal psychoses.

That encephalitis lethargica as well as infantile paralysis is not a separate disease, but only a complication of influenza (2) is shown by the fact that it usually occurs during influenza epidemics, and is ushered in or accompanied by other symptoms of influenza or of the early stage of infantile paralysis, for which in its initial stages it is at times mistaken, even by physicians who consider sleeping sickness to be a distinct disease, having nothing in common with either of the others.

Case I.—An interesting case in point was that of a young woman aged twenty-five who, after suffering for a few days from sore throat and catarrhal symptoms of influenza, persistent vomiting and drowsiness occurred alternating with delusions. She also suffered from amenorrhea. One of the attending physicians suspected sleeping sickness, while another thought it to be pernicious vomiting of early pregnancy and advised a curettage, after which the nervous symptoms increased. She finally recovered slowly.

Case II.—In another case of a boy aged five, during August, 1920, the initial symptoms of a cold were followed by gastrointestinal disturbances, fever and then by very painful torticollis, some drowsiness and weakness of the right arm. The parents became badly frightened and rushed the patient from their summer resort to New York, where several specialists were consulted. One of these diagnosed the case as one of infantile paralysis, while another thought that the blood and spinal fluid findings pointed more to encephalitis lethargica. The boy gradually improved, and recovered without either paralysis or coma.

Case III.—In July, 1920, a boy of eighteen contracted a socalled cold from which he rapidly recovered, so that he resumed his occupation in a few days. But within a couple of days after that he took to bed again with fever, drowsiness and such marked gastrointestinal and other symptoms that a diagnosis of typhoid fever was made by his physician. Later, marked nervous symptoms with stiffness of the neck caused other physicians to suspect either encephalitis lethargica or meningitis. The boy then began to improve rapidly when suddenly he died from an acute dilatation of his heart caused by the influenza, which his case proved to be.

Because sleeping sickness in its various stages, from only slight drowsiness to fatal coma is only a complication of influenza similar to that of infantile paralysis—its only effective prophylaxis is that of influenza in general, such as avoidance of exposure to influenza contagion and to inclemency of weather and avoidance of overexertion or nerve strain in any one whose vitality has been undermined by a previous attack of influenza or similar factors; strict and sufficiently prolonged rest indoors during even mild grip, or latent grip (3) as manifested by anorexia, asthenia and profuse perspiration upon exertion or at night. Quinine which I found of the greatest prophylactic and curative value in influenza (4) should also be used in the above conditions in conjunction with strychnine and adrenalin, nutritious, easily assimilated food and avoidance of worry or excitement.

As there are as yet no means of foretelling in any particular person his possible predisposition to any particular complication of influenza, be it pneumonia, infantile paralysis, sleeping sickness or influenzal psychoses—every case of even mild influenza or of latent grip must be regarded as a potential precursor of these complications and therefore treated with all due care and precautions.

REFERENCES.

1. Frankel, Bernard: Exanthematous and Other Forms of Influenza, New York Medical Journal, February 16, 1918.

2. *Idem:* Epidemic Gastroenteritis, Infantile Paralysis, and Influenza, *ibid,* December 2, 1916.

3. *Idem:* Influenza versus Tuberculosis, *ibid,* January 27, 1917.

4. *Idem:* Prophylaxis of Spanish Influenza, *ibid,* November 23, 1918.

815 Park Avenue.

Report of a Series of Remarkable Cases of Injury to the Eyeball*

By WALTER L. PYLE, M. D.,
Philadelphia.

The ophthalmic observer is constantly reminded of the great amount of traumatism that the human eyeball can suffer without irremediable loss of vision. From a series of private cases, I have selected five illustrative instances in which sufficient time has expired to indicate permanence of result.

Case I. — The patient was an advertising agent, aged twenty-five, of fine physical appearance and in robust health. In May, 1905, while sitting by the window in a railroad car, he was struck in the temple by a stone thrown through the car window, leaving several bruises over the right eyebrow and right temple, together with numerous evidences of skin cuts from broken glass. Several pieces of the glass were removed, by the local physician, from the cornea and the conjunctiva, and the cul de sac was irrigated and atropine was applied. Not having complete relief from this treatment, the patient consulted me some days later, when I found by intense illumination that there was a larger wedgeshaped piece of glass, completely penetrating the cornea and resting tightly in position. This I removed, leaving a considerable opening, through which the aqueous flowed, causing complete evacuation of the anterior chamber and collapse of the cornea.

I put the patient on his back, with his head low, and made repeated flushings of the eye with warm saline solution. There was early and complete restoration of the anterior chamber, and within an hour I applied iodoform and atropine ointment and a supporting bandage. With the exception of a temporary change in the axis of astigmatism from 120° to 135°, there was nothing of significance noticed, and corrected visual acuity was perfect in both eyes. Although the eyes showed gradually increasing hyperopic astigmatism during the last fifteen years, corrected visual acuity remained perfect. There is now no evidence of the previous corneal wound.

The record of refraction in 1905 was: R+S.075+C0.37 ax 120=6/5; L+S.+037+C0.25 ax 60=6/5. The last record in 1919 was: R+S0.62+C1.62 ax 115=6/5; L+S0.62+C1.12 ax 65=6/5. There was no change in the extraocular musculature.

Case II.—The patient was a well preserved man of forty-five, a coal operator from Norfolk, Virginia. While hunting in November, 1914, he received, at short range, full in the face, the charge of a shotgun. He was given emergency treatment at a nearby hospital, and came immediately after to my office.

---

*Read before the Section on Ophthalmology, College of Physicians of Philadelphia, January 18, 1921.

I found considerable laceration and contusion of the right lower eyelid, with numerous small shot imbedded in the skin of the face. These were mostly removed. There was no evidence of a penetrating wound of the eyeball. However, there was a large vitreous hemorrhage, preventing satisfactory opththalmoscopic examination. The visual perception and projection were not greatly impaired. The ordinary tentative treatment was instituted, and the patient kept under continuous observation. By the end of the following month, the vitreous had completely cleared, and the visual acuity was practically restored. The contraction of certain conjunctival cicatrices and a small traumatic pterygium had produced a slight entropion necessitating epilation of the cilia from the margin of the middle of the lower right eyelid. Beyond this slight inconvenience, there was no resultant ocular or visual disturbance.

Before the accident in 1914 the refraction was: R+S0.37+C1.50 ax 75=6/5; L+S0.25+C2.25 ax 90=6/5; add +S1.25 for reading and bifocals. During the next five years, there was no significant change in the refraction, except that in the right axis to 60. The changes in the astigmatic axis have now ceased, and the last record of refraction in 1919 was: R+S0.12+C1.50 ax 75=6/5+; L+S0.25+C2.25 ax 90=6/5+; add S2.50 for reading. Throughout the period of convalescence the state of the external ocular musculature was practically undisturbed.

CASE III.—The patient was a nervous boy of fourteen, who was struck in the left eye with a shot from an air rifle, at about 200 feet distance. He was given intelligent emergency treatment by the local suburban physician. This consisted chiefly in the application of cold, and the supporting treatment for the resultant shock.

Within a short time, I examined the patient, and found a penetrating wound of the left upper eyelid, and severe contusion of the eyeball. The pupil was vertically oval, and nonresponsive to reflex stimulation. The anterior chamber was full of blood, and the vitreous was blood streaked. The boy was in a state of profound shock, with nausea and vomiting. There was prompt perception of finger movements, and, later, the fingers were slowly counted.

Ice compresses were continued, atropine was applied, and the patient was given small doses of mercury and chalk. So profound was the shock that the patient was wrapped in blankets, and a hot water bottle kept at his feet. Within twenty-four hours, the eye was found quiet and the anterior chamber apparently normal, with the hyphemia gradually disappearing. The pupil had become circular; but, despite the continuous use of atropine, it was only partly dilated. The media seemed to be clearing. A week later the pupil was fully and evenly dilated, and the vitreous cleared to such an extent that the vision was 6/45. The progress of the case toward recovery was uninterrupted; and in April, 1919, there was seen only faint floating vitreous opacities. Lenses were prescribed a few weeks later as follows: R+S0.25=6/5; L+S0.62+C0.37 ax 30=6/12. A subsequent x ray examination of the orbit was negative. In September, 1919, the patient suffered recurring boils, with several styes, and the appearance of socalled nervous headaches. In January, 1920, after homatropine cycloplegia, the following lenses were ordered: R+S0.25+C0.12 ax 90=6/5; L+S0.50+C0.37 ax 75=6/12. The change in the axis of the cylinder for the injured left eye from 30° to 75° was followed by complete comfort.

CASE IV.—The patient was a sturdy boy of fourteen, living near Hazelton, Pa. On April 2, 1918, he was struck in the right eye with B.B. shot from an airgun at short range. He was given immediate first aid, and an x ray picture was taken, and found negative. I saw him two days after the injury, and found severe contusion of the eyeball, with extensive subconjunctival hemorrhages. The pupil was irregularly dilated, with possible dislocation of the lens. The media were so hazy that ophthalmoscopic examination was impossible. The intraocular tension seemed normal. Atropine and ten per cent. dionine solution were applied for several days. Dionine was then suspended, and the atropine continued. On April 15th the inflammation had ceased, and a slight iridodialysis, to the right of the centre, was noticed. The lens had become completely opaque, but it was found firmly fixed in proper position. Atropine was continued.

The lens became further swollen, and on April 20th, a small piece of opaque cortical matter was seen in the anterior chamber. This was absorbed; and on April 30th the peripheral cortex on the nasal side began to absorb rapidly. Dionine in powder form was applied repeatedly. On June 3rd the cortex had so absorbed that a fundus view was possible through two apertures in the swollen lens. This clearing continued; and on February 15, 1919, the pupillary space was closed by adherent mass of lens debris, etc., still leaving intact the two clear apertures. By the application of +S.10.00D, vision of 6/12 was obtained. The eye remained quiet and painless, and subsequent x ray examination of the orbit was negative. The following prescription was ordered and has been worn for a year with complete comfort: R+S10.00=6/12; L+S0.25+C0.37 ax 180=6/5.

CASE V.—The patient was a machinist, aged twenty-eight, of Reading, Pa. On September 19, 1919, while grinding a tool, he was struck in the right eye with a fragment from an emery wheel. First aid treatment had been given and local ocular treatment continued until I saw him on November 4, 1919. I found the eye quiet, with beginning diffuse traumatic cataract. There was a small opacity below the centre of the cornea evidently at the entrance of the wound. With the pupil fully dilated, there was seen close to, or attached to, the lower central margin of the iris, a foreign body, which showed through a V shaped wound at the pupillary border. The record of refraction on November 14, 1919, was: R+S0.25+C0.62 ax 55=6/6; L+S0.25+C0.12 ax 165=6/5.

An x ray examination was made at my suggestion, with a negative report as follows: "We were unable to recognize any foreign body dense enough to be seen in the anteroposterior views. The lateral showed a small body about one millimetre long, and because of the inability to see it in all plates, we suspected a probable artefact in the plates. If it is a foreign body it is probably not in the eyeball. In order to prove this conclusively, we would like to have him return to the laboratory after he sees you at his next visit."

Inasmuch as I could see the foreign body, both by direct and oblique illumination, I sent the patient back to the x ray laboratory for a more careful study of the anterior segment of the eyeball.

A second examination was followed by this report: "This foreign body is so small that in doing the Sweet localization we are not able to see the shadow in the lateral angle plate to determine the position of the foreign body to the right or left of the median line; but we were able to determine definitely that it lies within the anterior chamber approximately three quarter of a millimetre beneath the cornea. If an attempt at removal is made, we suggest the best definite localization would be to use the magnet to get its relative position to the right or left of the median line."

On March 2nd, the cataract had matured to the point that vision had been reduced to 6/22. In another month the visual acuity was only 1/100; and at present there is only light perception and movement of fingers, but the opacity seems to be clearing in the periphery, and the patient claims to have more vision at the temporal side.

I have not made any attempt to remove the foreign body, for the eye has kept quiet and painless. If, later, it is necessary to extract the opaque lens, the foreign body can also be removed.

1931 Chestnut Street.

Two Cases of Foreign Body Removal*

By JOSEPH FRIEDMAN, M. D.,
Brooklyn,
Instructor, Nose and Throat Department, Post-Graduate Medical School and Hospital, New York,

and

SAMUEL D. GREENFIELD, M. D.,
Brooklyn,
Assistant Attending Otolaryngologist, Beth Moses Hospital.

PRELIMINARY TRACHEOTOMY WITH REMOVAL OF FOREIGN BODY FROM THE LARYNX.

Case I.—On Sunday, November 26, 1920, at 1:30 p. m., Dr. Weinstein, the house surgeon of the Williamsburgh Hospital, called our office to tell us that the ambulance had just arrived with a little boy who was choking to death. The history he obtained was that the child had swallowed a foreign body, the exact nature of which he could not ascertain, the parents of the child being foreign born. The youngster was cyanotic and breathing with difficulty, but when held in the inverted position (head down) the breathing was somewhat easier. We advised the doctor to keep the patient in this position, and started out immediately for the hospital. Upon arrival we found the child—a little boy, two years old—presenting all the signs and symptoms of laryngeal obstruction. The cyanosis was advanced; the dyspnea was marked; there was playing of the ribs and retraction of the intercostal spaces and suprasternal notch. The child was taken to the operating room and a hurried tracheotomy performed and a tracheotomy tube inserted. The child was immediately relieved.

Several minutes later a small sized Jackson laryngoscope was introduced, and the entrance to the larynx and esophagus was found obstructed by a mass which proved to be a large piece of boiled beef (Fig. 1). The mass was grasped and removed with a pair of Mosher alligator forceps. Because of the size of the foreign body, we had to remove forceps, foreign body and laryngoscope simultaneously. The mass was very friable, and it was necessary to make three attempts before all of it was extracted. There was no injury to the larynx, the vocal cords were somewhat congested, with a small abrasion on the left arytenoid cartilage. The tracheotomy tube was allowed to remain twenty-four hours, after which time it was removed. The child made an uneventful recovery, the wound being completely healed in eleven days.

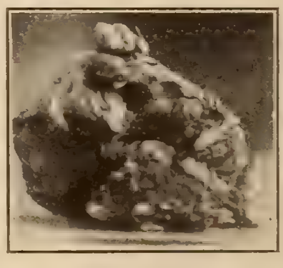


Fig. 1.—Piece of boiled beef removed from esophagus.

FOREIGN BODY IN THE ESOPHAGUS.

Case II.—M. M., female, aged five, was referred to us by Dr. L. Rachlin with the following history: Seven days previously the child had swallowed a button. For thirty-six hours after the child vomited all solid food, but was able to retain fluids. Gradually this condition was overcome, and at the time of our examination she was able to partake of all foods, but she experienced pain upon swallowing. Otherwise the child was perfectly comfortable; played as usual, and slept soundly at night. The child had been seen by several physicians for the pain experienced on deglutition, and they had all attributed this as due to injury of the throat by the button at the time of its passage downward. The child had been purged rather vigorously and the stools were carefully examined, but the button had not been recovered. Examination of the throat revealed nothing abnormal. The child's temperature at this time was 100° F. The history in this case was very suggestive, and we advised sending the child to the hospital to have röntgenological examinations made. The child was admitted to the Williamsburgh Hospital, and the x ray pictures disclosed the presence of a foreign body at about the level of the second rib (Fig. 2).

---

*Case I was presented before the Williamsburgh Medical Society, December, 1920, and Case II, May, 1921.

We succeeded in obtaining a button similar to the one the child had swallowed, and from its shape and contour it appeared as though we would have some difficulty in getting a firm hold upon it. Under ether anesthesia, a child's size Jackson esophageal speculum was introduced and the button was easily brought to view, it being located about an inch below the cricopharyngeal constriction. It appeared on edge and with a pair of Mosher alligator forceps it was firmly grasped, but unfortunately it slipped out of the forceps. A firmer hold was taken and extraction accomplished, at the same time withdrawing the esophageal speculum (Fig. 3). The postesophageal wall was slightly ulcerated, and an application of twenty-five per cent. argyrol was made at this time. This was repeated upon subsequent examinations, and the ulceration was seen to heal rapidly. The child made an uneventful recovery.

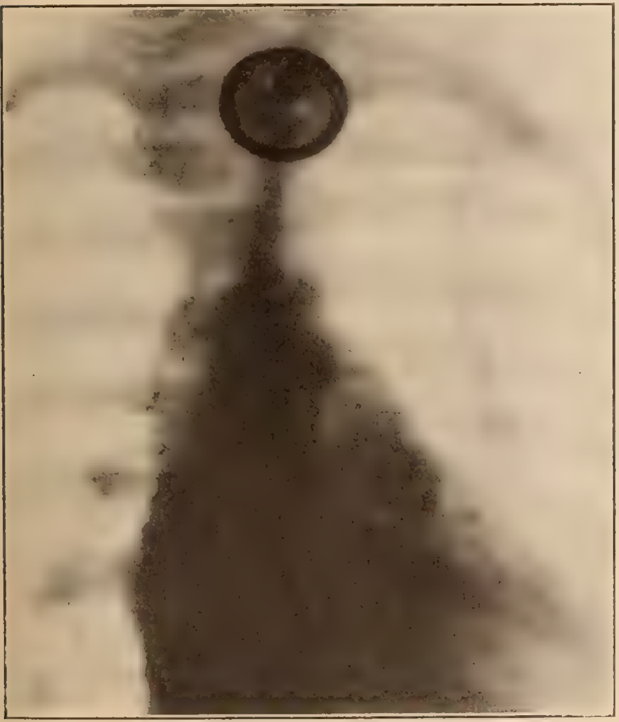


FIG. 2.—X ray photograph of button in esophagus.

This case presents a number of interesting features to which we wish to call particular attention. First, the unusual size of the foreign body, the button being a little more than seven eighths inch in diameter and five eighths inch in thickness. Second, the length of time that the button was lodged in the esophagus. It was removed on the ninth day and there was comparatively little sloughing and necrosis of the esophagus. Third, with a foreign body of such size in a child, one would be led to expect more marked symptoms than were manifested. As stated, except for the first day or two after its entrance into the esophagus, the child complained of practically nothing but slight pain upon swallowing.

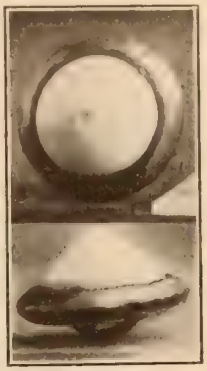


FIG. 3.—Button removed from esophagus.

691 LAFAYETTE AVENUE.

Brain Tumors as Seen in Hospitals for the Insane.—Mary E. Morse's (*Journal of Archives of Neurology and Psychiatry,* April, 1920) conclusions are as follows: Brain tumors occur in general hospitals and in hospitals for the insane with about the same frequency. The group sent to hospitals for the insane is composed partly (thirty per cent.) of patients recognized as defective or psychotic before the development of the tumor and partly of those in whom mental symptoms appear with the tumor. The average age of patients with brain tumor sent to hospitals for the insane—fifty years—is greater than the age at which brain tumors usually occur; sixty-eight per cent. of the cases in these hospitals occur in patients between forty and sixty years. Frontal tumors, predominate, forming thirty-three per cent. of the cases.

The majority of patients are admitted in the late stages of the disease, and the condition is diagnosed, even tentatively, in only about twenty-five per cent. of the cases (excluding those admitted to the hospitals with the diagnosis). The chief reasons for the small proportion of cases diagnosed are that more emphasis is laid on the psychiatric than on the neurologic aspects of the case, that ophthalmoscopic examinations are not made as a routine measure in organic cases, and that, as the majority of the patients are middle aged or elderly, there are frequently complicating factors, both mental and physical, which would be absent in younger persons. Cerebral arteriosclerosis is a complication, at least anatomically, in somewhat less than half the cases. In brain tumor of middle aged patients committed to hospitals for the insane the usual predominating mental symptoms are simple deterioration and apathy. These were most prominent in the frontal.

Marie Curie

By DAVINA WATERSON,
New York.

There was a certain professor of physics at Warsaw University, one Skladowski, and his young daughter, Marie, motherless at eight, helped her father, just as a clever child would delight to do. But money was not very plentiful, so she went as governess in a Russian family. In one of the too frequent risings among the Warsaw students, she once stood a chance of being questioned as their friend and perhaps of involuntarily betraying them. Rather than risk this, she went away to Paris and became a student in the University, where, in 1893, she gained the licentiate in physics, and, in 1894, the same in mathematics.

Along came Professor Lippmann, with a quick eye for talent. He introduced Marie to his most promising pupil, Pierre Curie, who found in her not only a helper but even a forerunner, and, in 1895, a most acceptable wife. It was an ideal marriage, each desiring to honor the other most, each intent to hear what Science had to say.

Soon after marriage Mme. Curie got the certificate entitling her to instruct girls in physics at the Ecole Normale, Sevres. Three times she took the Gegner Prize, in 1892, in 1900, and again in 1902, with the Barthelot medal. In 1904 the Curies shared the Nobel Prize with Henri Becquerel; in 1911 Mme. Curie received it alone.

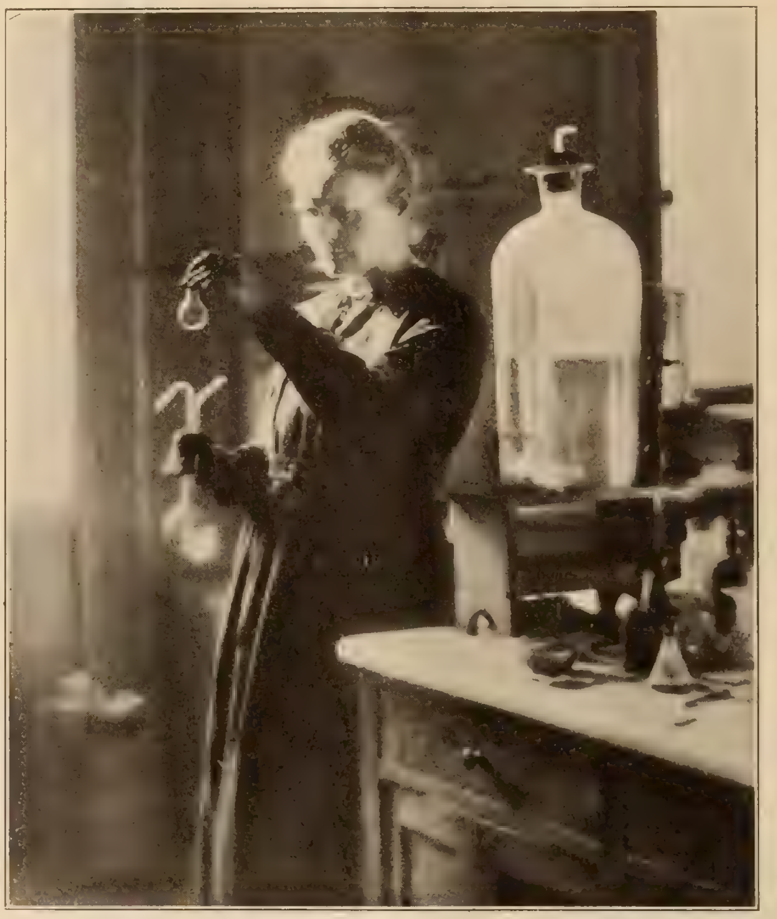


FIG. 1.—Marie Curie in her laboratory.

Another eager adventurer in Paris on the physicist path was Henri Becquerel, who worked with his father. In 1896 he was carrying out some experiments which his father had initiated concerning the phosphorescence of metals, and found that the invisible, spontaneous radiations sent out by phosphorescent uranic salts came also from uranium and its protoxide, even from the metal itself; yet none of these were phosphorescent. From this he concluded the radiation to be independent of phosphorescent properties and produced by the uranium atom alone. He afterwards found this invisible radiation acted on photographic plates and discharged an electroscope.

This stirred the whole physicist world. Then Marie Curie and a colleague found that thorium possessed a similar power. She found that of the many elements separated out from pitchblende, two in particular, bismuth and barium, were particularly radioactive. She recalled that ordinary bismuth and barium were not at all radioactive, and, working from this, found that this radioactivity was due to two new elements present in pitchblende in minute amounts: polonium (so named after her own country) in association with bismuth, and radium in association with the barium. Mme. Curie says (1): "We believe the substance we have isolated from pitchblende contains a hitherto unknown metal, very similar to bismuth. May we be permitted to add that, if the existence of a new simple body is confirmed, the discovery will be entirely due to the new method of investigation given to us by the rays discovered by Monsieur Becquerel."

Finally, Pierre and Marie Curie, with their associate, G. Bémont, taking advantage of a slight difference in solubility between the new element and the barium salt, used a process known as fractional crystallization, and a product was found with only an inappreciable portion of barium—chloride of radium, whose ray emitting power was estimated to be 1,800,800 times that of the same quantity of uranium. "We have met with a second substance, strongly radioactive and entirely different from polonium in its chemical properties. Reasons lead us to believe that we have a new element, to which we propose to give the name of radium. Its radioactivity ought to be enormous" (2).

Speaking of radioactivity, she says (3): "While investigating the properties of the strongly radioactive materials, polonium and radium, we have found that the rays emitted by these substances, when in contact with inactive bodies, have the power of communicating radioactivity, and this lasts a considerable time."

Like many other great discoveries, this was received at first with indifference by the world at large. There was little or nothing to be found in the scientific journals of Europe or America. Even in the 1900 Exhibition in Paris it was practically overlooked, then not fully appreciated, until Marie Curie, in 1903, published the famous thesis (4) which gained her the Doctorate of Physical Science.

Scientists remember their first visit to the Curie laboratory. It was as modest and unassuming as the great discoverers themselves; in fact, little better than a shed, almost hidden by the surrounding buildings, but a shed in which the marvelous light was born, the world unheeding, a few scientists joyfully triumphant, among them Lord Kelvin. "I recall," says Paul Langevin, "the pride with which Kelvin showed me a specimen of radioferric barium, dated 1900, the gift of Curie, which made him the first possessor of radium in England."

Still Paris gave no proper laboratory for radium research, which was carried on in a species of conservatory glaringly hot in summer, cold and draughty in winter. Curie worked in his overcoat because of his rheumatism, and the precious specimens lay on benches around. "We had no cupboards in which to put away our radioactive products; they had to be left on tables and benches, but oh, how I remember the delight we felt when we sometimes went there at night and saw on all sides little twinkling lights given out by the products of our work!"

When the importance of the discovery was realized, we learn from Mme. Curie that, "Thanks to the kindness of Professor Suess, of Vienna University, we have had a gift of 100 kg. from the Austrian Government. It does not contain uranium any more, but has polonium and radium, which will help our researches." The Societé Centrale de Products Chimiques, under the direction of Professor Anton Dibierne, undertook the initial treatment of the ore.

Then came a blow for which the successes of science had no solace. Pierre, one moment all alive, eager, hurrying from a talk with Perrin, was knocked down by a wagon on the Rue Dauphine, April 19, 1906; his head was crushed, and death must have been instantaneous. Scientists lost a great personal friend, the world one of its most brilliant men. The strong spirit of his wife almost failed, but the demand for radium was increasing; its healing virtues known; and she set to work again.

The Austrian Government was then the sole known possessor of pitchblende, but was unwilling to sell or lend to the Paris laboratory. Marie Curie asked them for a small loan of radium for continued experiments, but the insurance was so high that she appealed to the Minister of Public Instruction to be responsible. Monsieur Pinchon wrote to the French ambassador at the Austrian court, urging that the Curies had never made any secret of their work, and seconding their request. The uranium salts were promised, but, after waiting two years, all Madame Curie received was a catalogue of the Joachimsthal chemicals, priced higher than ever, and her name, as applicant, at the foot of the list!

It has been a costly affair, the tracing of radium. The investigations of Mme. Curie have cost thousands of dollars, partly provided by the Austrian Government and the Rothschilds. It was, at first, a scientific curiosity, and cost \$2 a milligram to show in classrooms. Fourteen years later the same quantity cost \$20, and, in 1920, \$120.

Madame Curie's great idea is to have a quantity of radium for research use only, and to let the National Institute of Radiotherapy in Paris, in unison with all such institutes, centralize the scientific documents relative to its applications and all which refers to it from a physical and biological point of view. So each country should have its documents complete, especially regarding natural resources in radioactive minerals, waters and gases.

The after career of Marie Curie is known to the medical world, and is today in every journal. We have dealt only with the discovery of radium, and, in a more intimate paper, could show the scanty help afforded, the want of money which frets and jars and shortens life, the honors gained in after life which soften the edges of memories which a wise man tries to forgive and forget.

REFERENCES.

1. Curie, Marie: *Comp. Rendus,* cxxvii, No. 3, July, 1898.

2. Curie, M. P., Curie, Marie, and Bémont, M. G.: *Comp. Rendus,* cxxvij, December 26, 1898, abstracted in *Chemical News,* January 6, 1899.

3. Curie, Marie: *Comp. Rendus,* cxxix, No. 19, 1899.

4. Curie, Marie: *Thèse Presêntee à la Faculté des Sciences de Paris pour obtenior le grade de Docteur es Sciences. Physiques.*

Extending the Field of Conscious Control.—William A. White (*The Psychoanalytic Review,* Vol. VII, No. 2, 1920) calls attention to the limited self knowledge possible to one who is lacking in knowledge of his unconscious mentality. In medical practice, for example, the physician cannot intelligently prescribe without knowledge of the unconscious wishes of the patient. Too often the very measures he uses only gratify the unconscious wish which is one cause of the illness. It is necessary therefore to bring motives more and more under conscious control. Physiological brain development as well as social progress have utilized the principle of extending conscious control. Illness, as well as other forms of reaction, are more dependent upon inner wish factors than outside situations. These unconscious wishes are projected upon the external world, which is then falsely interpreted and acted upon in conformity to the wish. Therefore personal conquest of the environment, through accurate knowledge of and a fairer attitude toward it and those within it, depends upon the extension of self knowledge and the intelligent separation of one's own wishes from external reality. Mental hygiene has to do with this enlargement of consciousness. Much energy that should be utilized in putting instincts into well guided action is now expended in following the condition imagined.

Editorial Articles

GOLF AND THE PUBLIC HEALTH.

Gradually golf is coming into its own as a public health measure, as an instrumentality for the prolongation of life and the prevention of premature senility. It has risen from the plane of dude shinny and old man's baseball to the dignity of a universal game for all classes, all ages and both sexes. A good golf course is now as essential to community pride as public parks, public playgrounds and an electrically illuminated Main Street. Aside from the fact that golf possesses the element of personal competition which is the basis of all really good games, it is a safe and sane form of physical exercise, one which may be undertaken by the hardy and the weak alike. Intraarterial pressure may rise slightly at a missed putt, the heart may temporarily cease beating when the ball is progressing perilously near a bunker, but when the ball leaves the tee with a soul satisfying crack and perches conveniently in a beautiful brassy lie, there is a sense of beatitude which is a cure for every human ill. The easy walk over the springy turf, the smell of God's fresh air and green things growing, the vistas of leafy trees, clear skies and autumn sunshine, these make for peace of mind and length of days.

Best of all, golf is psychologically sound because the psychology of golf is the psychology of life itself. The coordination of eye and arm and body, the mental concentration which shuts out the chatting caddy as well as that vilest of earth's creatures, the man who whistles on the course, the autogenous honesty which permits no forgotten strokes, the patience of the losing game, the abolition of self repression which permits blowing off a little steam when things go badly, and the courage of the tricky putt, these build mind and character and body. In golf as in life, you must keep your feet on the ground, you must humbly keep your head down, you must pay attention to what you are doing and you must do it cleanly, accurately and you must not strive too hard. This brings in the quality of faith, faith in yourself and in your club. And playing thus, with hope in your heart that the ball will clear the ditch and charity for the player who has just dubbed his ball, peace and forgetfulness of all the worries of life descend upon you and you are refreshed.

The great problem of public health today is the prevention of the ills of middle life, those general diseases which cut men off in the zenith of their power. Golf may not be the only means of checking these, of tiding men and women over the climacteric shoals, and of rounding out a life of usefulness, but certainly it is a pleasant and convenient way to do these things and hence to promote the public health.

THE DIET OF THE WEANLING.

There are some who think, and by virtue of their experience have the right to be listened to with respect, that the value of cow's milk as an article of diet has been unduly extolled. Dr. Harry Campbell goes so far as to insist that after a babe has cut its teeth, milk in liquid form is not only not a good food, but a distinctly unsuitable one. He holds that the teeth are intended to masticate hard food, and that much of the gastrointestinal trouble and bad teeth are due to lack of use. The population of civilized countries nowadays, eat for the most part predigested foods and foods of a soft, pappy nature, which afford no exercise for the jaws and teeth, do not excite the salivary glands to action, call for little exertion of the digestive organs and do not stimulate the gastric secretions to effort.

As a matter of fact, the indictment is largely true so far as adults are concerned, but what about the feeding of infants between nine months and five years of age? As said before there are many who now do not agree to the assumption that the bulk of the food supplied to babies should be cow's milk. Of these Dr. Harold Waller is one. At a meeting of the Society of Medical Officers of Maternity and Child Welfare Centres held in London on April 15, 1921, he stated his opinion that after nine months of age infants thrived excellently on a mixed diet. In a letter to the *Lancet,* April 30, 1921, Dr. Waller elaborates his views. He points out that there are many reasons for supposing the child's development undergoes changes which correspond very accurately with the adoption of a solid in place of a fluid diet. The appearance of teeth, the slowed and altered character of growth, coincide with a marked change in habits. The previously placid creature, mainly content to sleep and feed, becomes an energetic acrobat who takes an immense amount of physical exercise. There is further, the interesting fact, often attributed to obstinacy or original sin, that about this age he stoutly objects to being fed entirely on milk, and shows an almost unconquerable preference for solid food. Another piece of evidence, which Dr. Waller thinks may carry conviction, is to be found in the very perfect physique of large numbers of children to be seen playing in the streets of London, who have been reared on the primitive plan that he has suggested may be the normal. Such children have in many cases been nursed entirely at the breast for six or seven months. After that small amounts of solid food have been allowed, and a steady substitution of their parents' meals for the breast milk has gone on up to the age of about fifteen months.

Perhaps, however, the main objection brought by Dr. Waller against the use of cow's milk as a substitute for mother's milk, is that it is usually given in immoderate quantities. Dr. Eric Pritchard has always declaimed against the excessive and too frequent feeding of infants, believing that the custom is the chief cause of rickets in England.

At one time it would have been regarded as rank heresy to express doubts as to the great value of milk as a food and especially as a substitute for mother's milk. At the present time there are numerous dissentients from the view that cow's milk, even if clean (an almost impossible attainment for the poor) and properly modified, is an ideal food for infants. Possibly our ideas as to infant feeding, like so many of our long held and cherished views, need revision. One point does not admit of argument, that in the majority of cases mother's milk is the best food for infants, and that mother's in every class of life should be taught to suckle their infants. It does seem reasonable that solid food should be eaten more freely than it is now by adults and by young children after they reach a certain age. The fetish of cow's milk as the sole diet for weanlings is being subjected to so much criticism of a destructive nature that the subject should be investigated and discussed anew.

INTRAVENOUS PROTEIN THERAPY IN PUERPERAL SEPTICEMIA

Puerperal septicemia is an immensely difficult condition to treat successfully, in fact, there is no sure remedy for severe septic infection. Nursing plays an important rôle, and rest, food, drugs and hygiene, must constitute essential parts of the treatment, but that these are administered properly and in due season depends almost wholly on the nursing.

With regard to the measures to be taken to antagonize the bacteria and their toxins and if possible to rid the system of them, specific or non-specific agents may be employed. Vaccines and antisera are to be numbered among the former: and in the latter category come peptone and other foreign proteins. Dr. A. E. Gow, in a discussion on puerperal sepsis that took place in the Section of Obstetrics and Gynecology at the recent meeting of the British Medical Association, pointed out that it is by the judicious employment of substances in both groups that the best results are likely to be obtained. He dealt with the intravenous injection of peptone as an accessory to sensitized vaccine in the treatment of pyogenic septicemia.

He stated that the solution for intravenous injection is made up as follows: To ten grams of Witte's peptone in a clean glass is added about five c. c. of hot freshly distilled water and the peptone made into a paste by stirring with a glass rod; the paste is made thinner and thinner by the slow addition of hot distilled water until about fify c. c. have been added. The volume is then made up to 100 c. c., a little sodium carbonate added, and the whole boiled, stirring the while. The hot solution is filtered through a sterile filter paper and funneled into a sterile flask, and the filtrate heated for twenty minutes on a boiling water bath. When cool the flask is sealed with a sterile rubber cap. The first dose of such a solution which may be given intravenously to a septicemic adult is from eight to ten c. c. The quantity is increased by two c. c. every other day or so until sixteen, eighteen or twenty c. c. are given at a time. The injection must be made slowly, and for that reason Gow employs Nolf's technic, using a Record syringe and a very fine bore needle.

In cases of puerperal septicemia the injection of peptone tends to cause an immediate and rapid fall in blood pressure, a rise in the pulse frequency and if the patient has a leucocytosis, it rapidly induces a high degree of peripheral leucopenia, all of these phenomena being of very short duration. Now of these changes which take place simultaneously the easiest to record as a guide is the pulse frequency, and while the injection is in progress the nurse keeps count of the radial pulse, calling out the number each quarter of a minute. If this exceeds thirty-four the injection is temporarily suspended. It is well to have a hypodermic syringe containing one in 1,000 adrenalin at hand, although Gow has never had occasion to use it. As a rule the patient experiences no abnormal sensations during the first few injections, but with later ones there may be a slight fullness in the head, a pins and needles feeling, a transient stabbing pain in the bottom of the back or a little nausea. A rigor may follow during the course of an hour or so. However, attention is drawn to the fact that the occurrence of a rigor is an excellent sign, for it appears to be followed invariably by marked clinical improvement, and often this first induced rigor marks the turning point of the disease, and even in such conditions as infective endocarditis it leads to temporary benefit. Gow has never used peptone alone in a case of streptococcal septicemia, but states that peptone injections may be started at once while the autogenous vaccine is in preparation.

Although he is convinced that peptone is a very valuable adjunct to sensitized vaccine he makes no extravagant claim that it always brings a septicemia to an end. In short, peptone may be regarded as a useful accessory to other forms of treatment helping the acute case to become localized and in the subacute where subcataneous vaccine alone is often of little avail, the two may be combined with the greatest advantage: in the absence of general peritonitis it tends to prevent abdominal distension and if present to remove it.

PHYSICIAN AUTHORS: DR. JAMES MARTIN PEEBLES.

The subject of how to live a hundred years is a hardy perennial. Apostles of methods of prolonging life arise continually, and, sooner or later write books about their methods. The books have a large sale, for the subject is one of enthralling interest to everyone. Although this is a pretty unsatisfactory old world, there are few who seem to want to leave it. There are no statistics on the matter, but it is a fairly safe guess that less than a half of one per cent. of the readers ever reach the age of one hundred. What about the authors? Alas, it is to be feared that, amidst the uncertainties of life few of them reach their goal. Whenever they do, their method is worth looking into. It is possible, even probable, that Dr. James Martin Peebles of Los Angeles, Calif., has been the most successful, personally, of all exponents of centenarian achievement. He is now so near the hundred year goal that he is looking with extended vision toward an additional quarter of a century. Furthermore, he started early in life—as a centenarian's life goes—to guide his fellow man into the upper reaches of Methuselahistic longevity. It was about forty years ago that Peebles, then a practising physician in Philadelphia, wrote a book on *How to Live a Century and Grow Old Gracefully*. He was then nearly sixty, but long before that he had been expounding his old age doctrines. Last March 23 Dr. Peebles celebrated his ninety-ninth birthday and is now on the home stretch of his hundred year course, with excellent prospects that he will fill out the year and many more besides. Controversialists may submit that Dr. Peebles's method is entitled to only part of the credit for this achievement, that his inherent ruggedness, the beneficial climatic conditions of southern California, and other factors are to be considered. But without arguing the matter, the fact remains that Dr. Peebles is on the brink of a hundred years, with excellent health and faculties unimpaired, after a life of strenuous activity which he still maintains in considerable measure. He is the World's Missionary at Large for the Spiritualist Church of America, he is an active editor and lecturer, he takes some part in the management of a large publishing house in Los Angeles which he founded a few years ago, and he still is writing books and magazine articles. The book he is working on just now is a revised edition of his *How to Live a Century,* which will embody the features of the volume of nearly fifty years ago and also incorporate supplementary matter, the result of recent hygienic surveys and physical inventories of himself. Despite his ninety-nine years he still is a forward looking man and is ambitious to map out for himself and others some programme that will meet the distinctive needs and changing problems of those who have passed the century line.

The cornerstone of Dr. Peebles's longevity programme is, as he says, simple "obedience to the laws of nature." These laws, which are subject to some readjustment from time to time, have to do with diet, sleep, fresh air, exercise, nerves, mental attitudes, and other factors, but Dr. Peebles stresses diet. "For sixty years," he says, "I have eaten no animal flesh, fish or fowl. Nor do I eat pickles, or black pepper, or mustard, or catsup, or old cheese, or sauerkraut, or boiled cabbage or hot cakes. I live hearty and well on wheat, corn, rice, barley, eggs, cream, butter, nuts and delicious fruits that grow in the sunshine. My brain was never so clear and I could never write so easily as now. I obey nature's laws so far as I possibly can and have unbounded faith in God." His doctrine of longevity, in short, is simply a code of right living based on scientific hygiene.

Peebles's life has been a busy one in the rôle of pastor, physician, author, editor, school teacher, diplomat, reformer and government official. As a reformer of eighty years' activity he has been associated with practically every national reform, championing them on the platform with the most prominent men and women of his day. When he was still in his teens he began lecturing on temperance, antislavery and woman suffrage. He has done, perhaps, more than any living man to bring about prohibition. He was one of the founders of the Good Templars, a prohibition organization of tremendous membership in the early nineties, and was the first Worthy Grand Chaplain of that organization. Prior to Good Templar days he was one of the chief figures in the Sons of Temperance. He lectured for woman suffrage before the Civil War when only a handful of women advocated it and he took an active part in the anti-slavery movement with Garrison, Phillips, Foster, Lucretia Mott and others. In 1868 he was a member of the Northwest Congressional Indian Peace Commission and in 1869 he was appointed United States consul at Trebizond, Turkey-in-Asia. For many years prior to the World War Dr. Peebles was an advocate of disarmament and international peace agreements and in 1886 represented the United States Arbitration League at the International Peace Conference of Europe, held, strangely enough, in Berlin in 1886. Yet Peebles has seen his share of war service. Although he was forty-nine years old when the Civil War began, he enlisted and saw considerable service in that struggle.

The list of books written by Peebles is a lengthy and varied one. He has written several psychic volumes, some medical treatises, some religious works, a volume on reincarnation and one comparing Buddhism and Christianity, a history of vaccination —which, incidentally, he opposes—and *Five Journeys Around the World,* a title which indicates the extent of his travels. This book is his literary *chef d'oeuvre* and shows that Peebles went about with his eyes and ears very much wide open. In it the natives, customs, temples, sciences and literatures of many lands are described and the world's religions and philosophies compared. Another of his books, *Demonism of the Ages and Spirit Obsessions* deals with the matter of how undeveloped spirits may cause paralysis, epilepsy, insanity and other ailments. This is one of a number of books and pamphlets of spiritualistic character. *The Christ Question Settled* is "all about Jesus—whether he was a myth, medium, martyr or the very God." It gives valuable evidence from researches made by Dr. Peebles in the Orient. *Seers of The Ages* is a book of biographical sketches of the noted prophets of the world's history.

Peebles was born at Whitingham, Windham County, Vt., on March 23, 1822. He is a direct descendant of the Peebles of Peebleshire, Scotland. His ancestors came from there to New England in early Colonial days. He was educated at Binghamton, N. Y., and at Oxford Academy, New York. At twenty he entered the Universalist ministry and held pastorates for several years at Oswego, Elmira, Baltimore and other cities. Leaving that calling, he studied in the Philadelphia University of Medicine and Surgery and was graduated as an M. D. in 1876. He began practice in Philadelphia and for a time had charge of a medical ward in the city hospital. Beginning as an allopath, he became, after a few years, an eclectic, relying, as he says, more upon diet, hygiene and suggestive therapeutics than upon medicines. Though he is not now in active practise, he still gives advice to many who come to him. In the early eighties he was a member of the faculty of an eclectic medical college in Cincinnati. He is a fellow of the Anthropological Society of London, the Psychological Society of London, the Academy of Arts and Sciences of Naples, the American Institute of Christian Philosophy, and other societies of lesser note.

SIMPLIFIED MEDICINE.

A wellmeaning teacher of medicine has discovered that the study of this subject is extremely complicated and needs simplifying. He has, therefore, in a small 12mo volume of some four hundred pages attempted to pack away all the important secrets of the art, so that at a glance the novice may comprehend the nature of disease, or a disease, and be ready to effect its cure. We are reminded of the remark of many a housewife, anxious to have her superfluous pastry devoured by an already sated guest,—"It is so simple!" We are told that in a certain disease, "we give ten drops of Fowler's solution." Without going into all explanation of why this substance is given, the author passes rapidly and simply on to the results of treatment. "Some patients improve, some get worse, very few are cured."

If this is simplified medicine we have already had too much of it. Indeed, the best thing that a medical student can get into his head is that medicine is not simple, even when expounded by the most learned professor in the most learned college in the land. Some of the branches of medicine are a bit cumbered with fine spun theory, but, when this is taught as theory, it is well for the student to know it, always provided that the first principles of the branch are made clear. But to try to simplify any part of medical science by giving bald facts is a dangerous if not a disastrous method. To teach that "we give" a certain drug without specifying in any way why we give it, especially when the results are so obviously doubtful, does not conduce to scientific thought or sensible practice. Instead of putting this book in the hands of the student of medicine one might much better follow the suggestion of Sydenham who, when he was asked by a prospective practitioner what he should advise in the way of preliminary study, replied, "Read *Don Quixote,*—I find it a very good book." *Don Quixote* is both entertaining and thought provoking. We fear this book on simplified medicine is neither one nor the other.

HISTORY.

Nowadays, in our most up to date medical schools, a not inconsiderable part of the pupil's time is engaged in the business of looking up the literature of the subject in hand, and he spends hours at a time digging among musty and dusty volumes of old magazines and books in an attempt to discover some fact which the teacher could tell him, if he would, in a few words. It seems a waste of precious time which might be spent to better advantage—and, in the days when medical courses were more condensed, it might well have been so considered.

As a matter of fact, the pupil is much benefited, for with the small grain of truth he is in search of he learns, unconsciously, a lot of history which is invaluable in shaping his attitude toward medicine. In no other study does the student approach his subject with so much misunderstanding of its limitations and with so great need of being made wise early in his career. In no other subject do we get so much conceit extracted from us by looking backward, and yet in no subject do we find more stimulus from such method of study, for truly there were giants in the earlier days of medicine.

This literary retrospection will also often save a man from making a fool of himself later by putting forth some bit of research as original when it may have been carried out long, long ago. Then, too, the habit of reading, once formed, carries over into later life, bringing pleasure and profit as well then as in student days, for reading "maketh a full man," which is another expression for a wise man.

For the mere facts therein contained, for practical use, medical lore is about as useless as ancient birds' nests, but for removing hampering notions and for putting something better in their place there is nothing better.

MILITARY MORALITY.

The old argument, suppression or regulation of prostitution, sways back and forth. It is a necessity, but regulate the vice. Examine the girls, doctor the girls, tolerate the girls, segregate them. The highest military officer needs them, the youngest soldier will seek them. They are as necessary as movies and concerts, as cigarettes or books to the men in camp. Their toleration expresses the general opinion.

The change from a hundred years ago shows that, unconsciously, this necessity is now not loosely admitted. It is regulated, and prostitutes are not in the camps themselves. Note is taken of those who go to them. Prophylaxis is compulsory. The evil consequences to health are shown by lectures and moving pictures. All this is done on a health basis. Military morality is elastic, and returned soldiers have told how they have been privately advised to resort to segregated districts by their superior officers who used them personally.

But one section of the Army believes that suppression will eventually lead to the formation of good habits, to a less bestial view of necessity, and Dr. Herman Goodman has permission to publish an experiment made during the war. The commanding general of the United States troops issued an order which forbade any soldier to enter the civilian controlled prostitute area, and stopped any prostitutes going into the military reservation. The military forces examined comprised about 12,000 men. During the first six months of 1916 the average venereal rate per thousand under toleration was seventy-eight; that is, there were 451 infections. During the next six months, under suppression, the rate each month was, for an average strength of 11,490 men, 0.52; that is, there were only 35 infections during the six months, these the result of disobedience to orders. It has been a matter of surprise to doctors and other interested persons to find through draft registration that venereal diseases were more prevalent in civil life than had been supposed. Fortunately such inquiries and zeal are still going on. Public opinion is, on the whole, against legal toleration and regulation, and, in a few cases, all for suppression. "Utterly impossible," comment those who favor sequestration. "You do not understand human nature." But the thin end of the wedge is in, daylight has penetrated the evil habitations and shown their polluted condition. Very slowly the change will come; the necessity for impurity may persist, but let those who work for health take heart from the difference in venereal conditions between 1820 and 1920 among our soldiers.

BRITISH HOME FOR AUSTRIAN CHILDREN.

On the borders of Bavaria, in Salzburg, there is the Klessheim Estate, and this the Berkshire Committee of the Save the Children Fund have opened as a home for underfed and weakly children whose strength can be built up by living in the country under favorable conditions.

On every hand the utility of saving children, if only as gun fodder, is being realized. Through the Friends Emergency and War Victims Relief (English) 55,000 children are being fed, 22,000 in Cologne, and, in Poland, 132 Children's Institutes helped. Add to this all the ultra-European help and a grim postwar picture shames us.

THE FIRST HOSPITAL DENTAL SURGEON.

It has been asserted that Guy's Hospital was the first to have a dental surgeon on the staff. This was Joseph Fox, who gave a series of lectures in 1799. His fine book, *The Natural History of the Human Teeth,* was preceded by some years by Hunter's great work, but Hunter was not a dentist, and Fox gave a particular elucidation of changes during the second dentition and an account of the diseases of children during the first dentition. This was printed, says the *Guy's Hospital Gazette,* March, 1921, for Thomas Cox, St. Thomas's Street Borough, London, 1803.

News Items.

Mme. Curie Receives Gram of Radium.—The presentation of the gram of radium to Mme. Curie took place in the East Room of the White House on May 20th, President Harding making the presentation.

$15,000,000 Medical Centre to Be in New York.—The world's greatest medical centre is to be created in New York at a cost of $15,000,000, under an alliance formed by Columbia University and the Presbyterian Hospital in negotiations that have now been terminated after eleven years. Dr. W. Walker Palmer, of Johns Hopkins University, has been chosen to head the new institution, which, it is hoped, will be finished by 1925.

Tuberculosis Fight On.—A formidable fighting force made its plans here in New York to attack the white plague—tuberculosis. The antituberculosis committee of the Knights of Columbus have met to begin a national survey and to devise means of cooperating with the United States Public Health Service and with the Red Cross. Dr. E. W. Buckley, of St. Paul, is head of the committee which represents 800,000 Knights and 2,200 councils. Educational, preventive and curative work will be planned.

Typhoid Vanishing Disease.—The ninth annual survey of typhoid fever by the American Medical Association indicated that it is a vanishing disease, so far as this country is concerned, at least. The figures given by the association cover sixty-eight cities in the United States having a population of over 100,000. In 1920 there were 1,007 deaths from typhoid fever in these cities, the population of which was twenty-seven and one third millions, a typhoid death rate of 3.7 per 100,000. From 1910 to 1920, an eleven year period, the survey deals with figures for fifty-seven of these sixty-eight cities, the typhoid fever rate in 1910 being listed as 19.6 per 100,000, while in 1920 it had decreased to 3.5, or about one sixth as high.

Infant Welfare in Europe.—A report on "Infant Welfare Work in Europe," recently issued by the United States Department of Labor, describes the development of infant welfare measures in six foreign countries, and points out the close relation existing between this work and a reduction in infant mortality.

In England and Wales, during the decade 1891-1900, the infant mortality rate was 153, while for the ten year period, 1901-1910, the time of growing activity in infant welfare work, the rate fell to 128. Within over a year, owing to the aid of Government grants, the number of health centres increased from less than 850 to 1,278. Between 1914 and 1918 the number of "health visitors" rose from 600 to more than 3,000. This expansion in infant welfare work was accompanied by a steady decline in infant mortality. In 1916, in spite of war conditions, the rate was the lowest ever before recorded.

In Austria and Germany, prior to the war, large cities in general lost fewer babies per 1,000 born alive than rural districts or small communities. The decrease in infant mortality dates from the introduction of modern infant welfare measures.

Change of Address.—The American Social Hygiene Association announces that its offices have been changed from 105 West Fortieth Street to fifteenth floor, 370 Seventh Avenue, New York City, and all exchanges addressed to Social Hygiene and Social Hygiene Bulletin should be sent to the new address.

Died.

Allen.—In Brownsville, Tenn., on Monday, May 9th, Dr. John Thomas Allen, aged sixty-four years.

Allis.—In Philadelphia, Pa., on Monday, May 16th, Dr. Oscar H. Allis, aged eighty-six years.

Bergeron.—In Philadelphia, Pa., on Wednesday, May 11th, Dr. Pierre N. Bergeron, aged fifty-one years.

Borsody.—In New York, on Thursday, May 19th, Dr. Frank Borsody, aged seventy-seven years.

Brownsfield.—In Phoenix, Ariz., on Sunday, May 1st, Dr. Robert B. Brownsfield, aged forty-one years.

Bryant.—In White Plains, N. Y., on Tuesday, May 17th, Dr. Frank Augustus Bryant, aged seventy years.

Coan.—In New York, on Sunday, May 8th, Dr. Titus Munson Coan, aged eighty-four years.

Cochran.—In Los Angeles, Cal., on Wednesday, May 4th, Dr. William G. Cochran, aged seventy-seven years.

Duggar.—In Auburn, Ala., on Thursday, May 5th, Dr. Reuben Henry Duggar, aged eighty-four years.

Dulles.—In Philadelphia, Pa., on Friday, May 6th, Dr. Charles Winslow Dulles, aged seventy years.

Graham.—In Gainesville, Ark., on Saturday, April 30th, Dr. Marcus Clay Graham, aged forty years.

Green.—In Paines Hollow, N. Y., on Tuesday, May 10th, Dr. Henry Harper Green, aged eighty-three years.

Halterman.—In Clarksburg, W. Va., on Wednesday, May 11th, Dr. Charles W. Halterman, aged fifty-three years.

Hill.—In St. Louis, Mo., on Thursday, May 5th, Dr. Russell S. Hill, aged seventy-two years.

Hoadley.—In Danville, Ind., on Sunday, May 8th, Dr. William J. Hoadley, aged ninety years.

Igoe.—In Tarrytown, N. Y., on Tuesday, May 10th, Dr. Owen Lambrose Igoe, aged forty-three years.

Inge.—In Mobile, Ala., on Wednesday, May 11th, Dr. Harry T. Inge, aged sixty years.

Kenyon.—In Pomona, Cal., on Sunday, May 8th., Dr. Frank Pierce Kenyon, aged sixty-eight years.

Martin.—In Hot Springs, Ark., on Thursday, May 5th, Dr. Edward Hamilton Martin, aged fifty-five years.

McClelland.—In Philadelphia, Pa., on Wednesday, May 18th, Dr. Robert W. McClelland, of Pittsburgh, aged thirty-five years.

Nielson.—In Chicago, Ill., on Saturday, May 14th, Dr. N. N. John Nielson, aged forty-three years.

Poindexter.—In Kansas City, Mo., on Thursday, May 12th, Dr. John Milton Poindexter, aged sixty-five years.

Powell.—In Bryn Mawr, Pa., on Thursday, May 5th, Dr. William Chambers Powell, Jr., aged thirty-four years.

Rowe.—In Cincinnati, Ohio, on Wednesday, May 4th, Dr. Frank H. Rowe, aged seventy-three years.

Smith.—In Freeport, Ill., on Tuesday, May 3rd, Dr. Alden E. Smith, aged sixty years.

Spaulding.—In Bluffton, Ind., on Friday, May 13th. Dr. Leander A. Spaulding, aged seventy-three years.

Sterres.—In Decatur, Ala., on Friday, April 29th, Dr. Willis E. Sterres, aged fifty-four years.

Stites.—In Philadelphia, Pa., on Tuesday, May 3rd, Dr. George M. Stites, of Williamstown, Pa., aged sixty-three years.

Vaughter.—In Little Rock, Ark., on Wednesday, May 4th, Dr. Samuel Paul Vaughter, aged forty-two years.

Vedder.—In St. Johnsville, N. Y., on Sunday, May 1st, Dr. Christian C. Vedder, aged seventy-six years.

Walker.—In Lambert, Miss., on Thursday, April 21st, Dr. Joseph Coleman Walker, aged thirty-one years.

Watkins.—In Buffalo, N. Y., on Thursday, May 12th, Dr. Francis L. Watkins, aged fifty-eight years.

Wunderlich.—In Brooklyn, N. Y., on Monday, May 16th, Dr. Frederick W. Wunderlich, aged seventy-nine years.

Book Reviews

TUBERCULOSIS.

Revue de la Tuberculose. Third Series, Second Volume, No. 1. Published by Masson & Co., Paris.

The *Revue de la Tuberculose,* which was founded by Verneuil in 1887, published under his direction up to 1895, and under Bouchard's direction up to 1917, is now published by L'Oeuvre de la Tuberculose, a newly founded society. The present editor in chief is A. Courcoux, with such men as Calmette, Courmont, Kuss,. Letulle, Richet, Rist and Robin as coeditors. These names, well known to all antituberculosis workers here as well as in Europe, guarantee the excellence of this magazine. The present number contains an admirable description of the clinical forms of pulmonary hémoptyses, their pathogenesis and treatment. The authors of this interesting work are Fernand Bezoncon and S. I. de Jong. They divide the clinical forms of hemoptysis as follows: in initial hemoptysis, hemorrhages due to ulcerative process, often repeated hemorrhages, hemorrhagic galloping phthisis, hemoptyses due to cavities resulting in most cases in immediate death. The authors divide the first group again in the type of initial hemorrhages which come from a latent tuberculosis heretofore unrecognized, and which result in a quiet form of typical pulmonary tuberculosis, and in another type designated as alarming hemorrhage accompanied by an active pulmonary tuberculosis. Another division is mentioned as one in which hemorrhages occur more rarely in the course of a confirmed ulcerative pulmonary tuberculosis. Lastly the authors mention a group called *formes hemoptoiques,* whereby they mean that type of pulmonary hemorrhage which occurs often during the course of the disease with or without an aggravation of the tuberculous lesions. Under treatment nothing new has been mentioned. Ipecac and atropine are considered efficacious, and as mechanical means the ligation of the upper and lower extremities, and, lastly, pneumothorax.

Other interesting articles in the volume are Latent Tuberculosis, by R. Burnand; Morphological and Pathological Notes on the Pleural Endothelium, by F. Dumarest and F. Parodi. Lastly, the journal contains the condensed transactions of the Scientific Section of the Oeuvre de la Tuberculose, held December 11, 1920, under the presidency of Dr. M. Robin. The following are the subjects discussed: The Tuberculous Contamination of the Child in Its First Years of Life, by Bernard and Debré; Reaction After the Use of Antigen of Besredka, by Rieux and Bass; Acid Resistant Organisms Found in Tuberculous Sputum, by Corone; and, finally, an interesting contribution by Herve on Pregnancy and Pneumothorax. Although to the reviewer it would not seem that three cases were sufficient from which to draw conclusions, nevertheless the author makes the following statement at the end of his report: "Thanks to the artificial pneumothorax, mother and child seem to have been protected against an active relapse, and in tuberculous women successfully treated by artificial pneumothorax, marriage and pregnancy may be permitted, providing that a complete arrest of the disease has been secured for some time."

BERGSON.

Bergson and Personal Realism. By Ralph Tyler Flewelling, Professor of Philosophy in the University of Southern California. New York, Cincinnati: The Abingdon Press, 1920. Pp. 304.

Every critic of another's works does at least this service: he sets the reader to furbishing up his own intellectual front. It becomes necessary for the reader to question whether he himself is accepting or rejecting according to the demand of reality the views of the critic or of the writer criticized.

This study of Bergson's thought expresses on the critic's part a partial acceptance, a partial dissatisfaction with Bergson's philosophy. Then the writer goes on to substitute the philosophical results worked out from his own mental life. The reader has therefore the opportunity to weigh the two systems of thought.

Copious extracts from Bergson's works are included in the footnotes and Flewelling's comments show wide and close acquaintance with the French writer's books. There seems to be something in Flewelling's own way of thought that prevents a closeness with Bergson in actual interpretation of life. He confesses that he is not satisfied with a philosophy of change unless there is behind the change a durable personality. He not only must have the personality as the something to make Bergson's "duration" a reality, he must further find such personality grounded in the One Personality, which is God. This gives to him satisfactory assurance of immortality, of morality, gives ground for an exalted spirit of selfsacrifice, in short permits all that the writer can desire. It wipes out the difficulties which a sheer philosophy of change presents against the acceptance of long cherished beliefs and yet obviates also the impossible results of a static absolutism.

Flewelling seems to have passed by a number of things on which Bergson's philosophy rests. Chief of these is the preservation of the past by each individual in the stream of duration. Flewelling need not have striven so hard to have reestablished a personality had he taken this into account. His book is interesting as a review of Bergson, largely because of the unmutilated quotations. It is of interest also as an example of an individual mentality struggling for a system to satisfy emotional, far more than intellectual needs. Impulse to all knowledge, to all philosophy, must arise from the emotional life, but one feels that here such impulse has not put itself sufficiently into the molding hands of intellect. The too emotional style of writing is evidence of this. Citations of poetry have been dragged in where they do not pithily illustrate the situation—the only excuse for quotations. The end of the book becomes a peroration out of the writer's feeling. His warped interpretation of individualism, for example, sets aside its true essence and forces the writer away from reality.

ESSAYS IN NATURALISM.

Accepting the Universe. Essays in Naturalism. By John Burroughs. Boston and New York: Houghton, Mifflin Company, 1920. Pp. x-327.

John Burroughs wrote concerning his Acceptance of the Universe, and was persuaded he had done it. He lived in the country, presumably on wholesome diet; took Emerson, Walt Whitman, Thoreau, as mental food, and professed to have settled any doubts of today or of tomorrow; he thought out all the big questions, made notes—not very consecutive—called God all kinds of names, confessed to a mild admiration of the Devil, regarded Nature as an unchangeable, ruthless, beneficent Power, one not caring for individuality, but for the whole.

Burroughs occasionally bursts into praises of his own belief, then little bits of his earlier theology worry him as he tries to fit them into his creed, though he calls them generally "old theological pap." It is a little difficult to determine his belief, as his notes are not clearly assorted nor the headings wisely chosen. His stronger utterances, of which I give a few, are not always supported in the rest of the book.

He first tells what Man wants:

"The demand of our day is for a scientific religion—an attitude of mind towards Creation begotten by knowledge, in which fear, personal hopes, individual good and the so called 'other world' play little part.

"Virtuous actions, upright conduct, heroic character, are seen to be their own reward: the security of the future is in well doing, and well being in the present. This is religion in the new scientific sense; a religion that moves us to fight vice, crime, war, intemperance, for selfpreservation and in brotherly love, and not in obedience to theological dogma or the command of a God. The great things done today are done in the name of science, of humanity, of civilization."

He does not go deeply into the question of why a myth occupies the first pages of the Bible, only finds it beautiful:

". . . The beautiful myth of the Garden of Eden and the Fall of Man is full of meaning. Surely it was a good devil that put man in the way of knowing good from evil and led to his expulsion from a state of innocent impotence." Apparently the Lord did not approve of the Devil's work.

". . . How childish to us now seems the plan of salvation as our fathers found it in the fervid and, I freely say, inspired utterances of St. Paul." He had done better not to speak of St. Paul as "inspired" yet leading our fathers to a childish belief. It is rather like damning with faint praise. Our forefathers found the Plan of Salvation a tremendously serious thing, "childish" is hardly the word for the conclusions they drew. Perhaps Dr. Burroughs suffered when young from parental dogma strictly interpreted.

All the mighty, compelling power of the New Testament vanishes as we read:

"The love of the Eternal for mankind is not a parental love—not the love of the mother for her child, more like the love a general has for his army. The battle is being won daily. The vast army of living forms moving down the geologic ages has been made strong through obstacles, till now we behold it in the fullness of its power with man at its head." The majority of mankind still find consolation in the five sparrows and the lilies and the lost sheep.

". . . Our theologians have blackened and defaced our earthly temple and swapped it off for cloud mansions in the Land of Nowhere. . . . But the other world fades as this world brightens. Science has made this world so interesting and wonderful . . . that thoughts of another world are becoming foreign to us. . . . Religion as a key or passport to some other world has had its day; a mere set of statements or dogmas about the Infinite mystery it has had that also."

The author should remember that he brings a cultivated mind to study Nature. The savage sees enmity, gods to placate, and enjoys a cannibal feast in scenery which would make Wordsworth weep for joy and regard with horror sucking in the juice of human flesh and having a wild dance afterwards among such tropical glory.

There are many good passages in the book, but why does the author, if so acceptant, so convinced, confess that:

". . . As far as I have got, or ever hope to get, toward solving the problem of the universe, is to see clearly that it is insoluble. One can only arrive at negative conclusions." He stirs us all up to agree with him, then leaves us questioning.

THE IN-LAWS.

The Sisters-in-Law, A Novel of Our Time. By Gertrude Atherton. New York: Frederick A. Stokes Company, 1921. Pp. 341.

To Californians this latest volume in Mrs. Atherton's "social history from the beginning of the last century" may be teeming with meat. Outsiders will not find it so. The development of personality in a young woman of the socially elect, Alexina Groome, is the theme. At the age of eighteen she falls in love with and marries Mortimer Dwight, who feels that by birth he is her equal, although Fate introduced him to the world in Utica and has made him work for a living as a mere clerk. It is his sister, Gora, who plays the foil to Alexina. A handsome Englishman of the real aristocracy appears during the troubled days of the fire, meets Gora under heartrending circumstances, falls in love with Alexina, not yet engaged, and sinks into the emotional background of these two women for the next twelve years. The war naturally brings him to the fore again, both women meet him, want him, and his social equal triumphs. For Gora has become a successful writer and to satisfy her cravings might injure her art.

A few points of psychological interest are brought out, although the author may not have been conscious of their import. The tall, dusky haired, gray eyed heroine shows a predilection for periwinkle blue. When Gathbroke, the English hero, makes his caveman proposal to her, she is wearing a bunch of the blue flowers. When twelve years later they meet and love again in devastated France, her gown is of periwinkle blue velvet. We wonder whether that is the reason for the vivid blue of the book's binding! At all events, during the years of her sexlessness, while she is Mortimer Dwight's wife only in name, Alexina's female friends are closest to her and the blue touch in hat and gown insisted upon.

Gora Dwight, at odds with a society that refuses her admission, compensates by writing social satire. It makes one wonder, though, how, with the mental faculties emphasized as they are in the two protagonists of the book, the essence of aristocracy is accepted as recognition by the socially elite. Although Gora herself sees the pure snobbishness of her brother, she feels and harps upon her own inferiority of circumstance. Fortunately, with Alexina's awakening to the possession of a mind, she loses permanently most of the caste discrimination against which, as a girl, she had automatically rebelled because it was the thing in the younger set. But then this poise of hers is explained with a wave of the hand and the envious, "She belongs," as though that explained anything at all.

At least we have the illusion in this book that the characters (with the exception of Mortimer, an ideal puppet of What will People Say) are thinking for themselves, making their own decisions, living their own lives. And this is an advance in novel construction.

THE APOTHEOSIS OF MEDIOCRITY.

Main Street, the Story of Carol Kennicott. By SINCLAIR LEWIS. New York: Harcourt, Brace & Howe, 1920.

This is the disgruntled epic of the American small town. It is the story of dullness triumphant, of withering respectability and commercial enterprise overcoming adventure and young life. It is a story of repression and, consequently, of a peeping puritanism. Lest any reader may think that his small town is an exception, Mr. Lewis hastens to assure him that Main Street stretches from coast to coast. Indeed, there are traces of Main Street to be found in many towns and cities larger than Gopher Prairie.

Mr. Lewis has labeled his book The Story of Carol Kennicott, but it is in reality the story of Gopher Prairie. Carol is a shadowy person at best, and the author has so identified her with himself that she is more a disembodied series of reactions than an individual. Carol, however, is the theme, the skeleton, the framework of the book. Mr. Lewis picks her up at college and quickly transports her to the St. Paul public library, where she spends several casual and unsatisfying years. She is at the stage where a girl who has no definite urge to be satisfied in work begins to wonder what happens next. Then comes Dr. Will Kennicott from Gopher Prairie and one day takes her back with him.

Carol finds Gopher Prairie a small, bare, hideous town, peopled with a race of intensely satisfied beings who desire nothing better than to gossip, play bridge, go to church and cheat the farmers, and who regard her plans for bettering the town as silly and impertinent.

Gopher Prairie's two most objectionable characteristics are directly connected. Its evilminded snickering in corners and its rigorous public parade of virtue are obverse sides of the same picture. Gopher Prairie has all the evils of puritanism without any of its high traditions or its reason for being. Its emotional life is stifled by respectability, and so respectability becomes but the screen for a festering mass of evil.

Gopher Prairie is intellectually illiterate, but anyone who does not go to church is damned publicly. Gopher Prairie is mean as well as ugly, and herd instinct there works with a fearful effectiveness to stamp out the least deviation from the accepted standard in mind as well as in clothes.

Carol tries to uplift the town and fails in every particular. Fails, and is misunderstood, and gets herself disliked, and finally bursts out against it, or rather Mr. Lewis bursts out for her:

"It is an unimaginatively standardized background, a sluggishness of speech and manners, a rigid ruling of the spirit by the desire to appear respectable. . . . It is negation canonized as the one positive virtue. . . . It is dullness made God. . . . A savorless people, gulping tasteless food, and sitting afterward, coatless and thoughtless, in rocking chairs prickly with inane decorations, listening to mechanical music, saying mechanical things about the excellence of Ford automobiles, and viewing themselves as the greatest race in the world."

Mr. Lewis goes further:

"Finally, behind all her comments, Carol saw the fact that the prairie towns no more exist to serve the farmers who are their reason of existence than do the great capitals; they exist to fatten on the farmers, to provide for the townsmen large motors and social preferment; and, unlike the capitals, they do not give to the district in return for usury a stately and permanent centre, but only this ragged camp. It is a 'parasitic Greek civilization'—minus the civilization."

But Carol does not break away from Gopher Prairie. She is no Nora, and though the doors of the doll's house open to let her out for a breathing spell, she returns to it again to become a "woman of Main Street." Carol lives along, is disillusioned because the dramatic association insists on giving The Girl from Kankakee instead of Shaw's Androcles and the Lion, has a baby, finds the inevitable other man and decides that he isn't worth breaking up her life for, and finally goes to Washington for two years to do war work, driven not by the awfulness of Gopher Prairie but by her husband's accusation of "sedition" when she defends the Nonpartisan League! She comes back, however. Carol is not a blazer of new trails, and she has not the ruthlessness necessary to save her soul at the expense of wrecking the home she has built up in Gopher Prairie. Mr. Lewis has tried to make her an ordinary person, and furthermore she is fond of her husband.

Main Street is packed with characters, some of them real people and others, like Carol, animated states of mind. Dr. Kennicott is the sturdiest and most credible person in the book. Always Mr. Lewis writes with an eye to his thesis rather than with loving attention to character. He has, however, an amazing knowledge of that vernacular which is talked by the average American and hardly ever reproduced, and he knows his Gopher Prairie.

In point of artistry *Main Street* cannot compare with Floyd Dell's *Moon Calf,* recently reviewed in these columns. The latter book is the story of a sensitive soul, the soul being the author's, but in spite of this handicap it is written with a fluid and lovely technic. *Main Street* is long and unwieldy and rough around the edges; it is less a novel than a public burning at the stake. Of the two, it is the hardier book, and the author's sensitive soul, if he has one, is nowhere to be discerned. Comparison of the books is interesting. Both are preeminent among recent novels by American authors.

FLAME AND SHADOW.

Flame and Shadow. By SARA TEASDALE, Author of *Rivers to the Sea, Love Songs,* etc. New York: The Macmillan Company, 1921. Pp. 144.

The songs of the spirit's flaming are those that move most in this little book. The shadow poems, presentiment of death, longings for peace, are too numerous and tôo much alike to bring the heavy silence home to us. In only one is the note of courage struck, in the sonnet Since There is No Escape. Gray Fog is atmospheric of the entire group.

> I watch the fog float in at the window
>   With the whole world gone blind,
> Everything, even my longing, drowses,
>   Even the thoughts in my mind.
>
> I put my head on my hands before me,
>   There is nothing left to be done or said,
> There is nothing to hope for, I am tired,
>   And heavy as dead.

In the best poem in the book, Compensation, the tenderness of the artist for her craft is shown at its highest.

> I should be glad of loneliness
> And hours that go on broken wings,
> A thirsty body, a tired heart,
> And the unchanging ache of things,
> If I could make a single song
> As lovely and as full of light,
> As hushed and brief as a falling star
> On a winter night.

All in all, not a powerful collection of verse; pleasing, but not arresting. Personal emotion has produced in Miss Teasdale a few searching thoughts, but the little climaxes of Then—and Now! are unimportant.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

SOURCE BOOK IN ANTHROPOLOGY. By A. L. KROEBER and T. T. WATERMAN. Berkeley: University of California Press, 1920. Pp. 565.

MICROBIOLOGY. A Text Book of Microorganisms General and Applied. Edited by Charles E. Marshall, Amherst, Massachusetts, Professor of Microbiology and Director of Graduate School Massachusetts Agricultural College. Third Edition, Revised and Enlarged with Two Hundred Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xxviii-1043.

DIE ANGIMOSE. Kritische Betrachtungen zur Lehre vom lumphatischen Rachenring. VON PROFESSOR DR. JOHANN FEIN, Wein. Berlin and Wein: Urban & Schwarzenberg, 1921. Pp. 76.

INJURIES TO JOINTS. Oxford War Primers. By Colonel Sir ROBERT JONES, C. B., C. H. M., D. Sc., Inspector of Military Orthopedics, Army Medical Service. Second Edition, Second Impression. London: Henry Frowde, Hodder & Stoughton, 1920. Pp. 195.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS. Thirty-second Annual Meeting, held at The Mayo Clinic, Rochester, Minn., May 31, June 1, and June 2, 1920. Volume XIII. Baltimore: Williams & Wilkins Company, 1920. Pp. xi-279.

HANDBOOK OF ELECTROTHERAPY, FOR PRACTITIONERS AND STUDENTS. By BURTON BAKER GROVER, M. D. President of the Western Electrotherapeutic Association; Fellow of the American Electrotherapeutic Association; Member of the Radiological Society of North America, American Medical Association. Illustrated with 103 Engravings in the Text and Six Plates of Twelve Charts. Philadelphia: F. A. Davis Co., 1921. Pp. xii-420.

A PHYSICAL INTERPRETATION OF SHOCK, EXHAUSTION, AND RESTORATION. An Extension of the Kinetic Theory. By GEORGE W. CRILE, M. D., Senior Consultant in Surgical Research, A. E. F., 1917-18. Professor of Surgery, School of Medicine, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland, Ohio, U. S. A. Edited by Amy F. Rowland, B. S. Original Illustrations. London: Henry Frowde, Hodder & Stoughton, 1921. Pp. xvi-232.

INJURIES AND DISEASES OF THE BONES AND JOINTS, THEIR DIFFERENTIAL DIAGNOSIS BY MEANS OF THE RÖNTGEN RAYS. By FREDERICK H. BAETJER, M. D., Associate Professor of Röntgenology, Johns Hopkins University; Röntgenologist, Johns Hopkins Hospital, and CHARLES A. WATERS, M. D., Instructor in Röntgenology, Johns Hopkins University; Assistant Röntgenologist, Johns Hopkins Hospital. Illustrated with 332 Röntgenograms and One Line Drawing. New York: Paul B. Hoeber, 1921. Pp. xviii-349.

SURGERY OF THE UPPER ABDOMEN. By JOHN B. DEAVER, M. D., Sc. D., LL. D., F. A. C. S. Barton Professor of Surgery in the University of Pennsylvania; Surgeon in Chief to the Lankenau Hospital, and Surgeon to the University Hospital; and Astley Paston Cooper Ashhurst, A. B., M. D., F. A. C. S. Associate in Surgery in the University of Pennsylvania; Surgeon to the Episcopal Hospital, Philadelphia; Colonel, Medical Reserve Corps, U. S. Army. Second Edition, With 9 Colored Plates and 198 Other Illustrations. Philadelphia: P. Blakiston's Son & Co., 1921. Pp. xvii-832.

ELECTROTHERAPEUTICS FOR PRACTITIONERS. Being Essays on Some Useful Forms of Electrical Apparatus and on Some Diseases Which Are Amenable to Electrical Treatment. By FRANCIS HOWARD HUMPHRIS, M. D. (Brux.), F. R. C. P. (Edin.), M. R. C. S. (Eng.), L. R. C. P. (Lond.), L. M. (Rot., Dublin), D. M. R. E. (Cantab.). Late Officer in Charge X Ray and Electrotherapeutics Departments, Third London General Hospital; Captain R. A. M. C. (T. F.); Late Consulting X Ray Physician to the Force in Egypt; Major, R. A. M. C.; Past President of the American Electrotherapeutic Association. Illustrated. Second Edition, Revised and Enlarged. London: Henry Frowde, Hodder & Stoughton, 1921. Pp. x-300.

THE NEW POCKET MEDICAL FORMULARY. Containing Formulae and Doses for Hypodermic Medication; Posological Table; Obstetrical Table; Table of Apothecaries' and Metric System of Weights and Measures; Fractures, Dislocations and Sprains; Poisons and Antidotes; Incompatibilities and Baths; Miscellaneous Emergencies, etc., etc. By WILLIAM EDWARD FITCH, M. D. Late Major Medical Reserve Corps, U. S. A., Formerly Lecturer on Surgery, Fordham University School of Medicine; Assistant Attending Gynecologist Presbyterian Hospital Dispensary; Attending Physician to the Vanderbilt Clinic, College of Physicians and Surgeons, New York City. Third Edition, Revised. Philadelphia: F. A. Davis Company, 1921. Pp. x-470.

Practical Therapeutics

CORRECTIVE GYMNASTICS.*

By C. E. Coon, M. D., F. A. C. S.,
Syracuse, N. Y.,
Syracuse Clinic.

A brief study of the results of the examinations of candidates for admission to the Army of the late war shows clearly the surprising number of men afflicted with postural defects. Many of these defects were large enough to disqualify the men for service, and all tended to make the men below normal and as a result of inherent and often an easily prevented weakness he was not a real soldier; at least not until he had had the physical instructions which is a part of Army training, which either made him more nearly normal and able to do his work, or in case he did not respond to this treatment he was later disqualified. So that with the large number disqualified by the local boards and those others disqualified and discharged at the Camp, a surprisingly large per cent. of all candidates was found to be unfit for the strenuous duties. The Surgeon General and the Medical Department of the Army early recognized this state of affairs and the Orthopedic Department was organized in August, 1917. Very soon after this, surgeons were sent to most of the camps and cantonments. Among the duties of these officers was instruction to the division officers and men in regard to special corrective gymnastics, not the usual socalled setting up exercises which are a part of the regular training, but exercises designed to correct and strengthen certain groups of muscles. The instruction work included other things,—personal hygiene, size and fit of shoes, and other essentials. A great deal of advice was given, of course, in regard to treatment of feet and legs. Napoleon said that an "army traveled on its stomach," but the experience of the other armies in the field since 1914 demonstrated the value of the feet.

This course of instruction at the various camps was given to line officers as well as medical officers, but the real practical application was done by the noncommissioned officers. Corrective exercises were done in classes under command of a noncommissioned officer. In many cases the results were excellent, at least sufficient to prove the value of the treatment when it could be instituted early.

The value of the regular setting up exercise was also clearly demonstrated, even when special exercises were not necessary. It did not require a close observer to distinguish the difference between the posture, gait and general appearance of the recruit at the time of his first appearance at camp and the same man some weeks later after routine daily exercises. Now if this is the true condition of the selected cases, those that had passed the examination of the local boards and were certified as being able to perform the strenuous duties of a soldier, how much more true it must be of those who were rejected by the local boards, of those who for other reasons were not examined, and the vast number of people who either by reason of age, or of sex, were not considered. It seems to me that one of the great lessons the Army taught us, is that the American people are not as physically fit as they fondly believed. What will be the result? Will we settle back into the old way of avoiding physical exercise whenever possible, or will we gradually accustom ourselves to more physical exertion and the consequent better health? Will we continue in our round shoulder, flat feet and general slumped posture or will we endeavor to overcome some of the effects of our flabby muscles and at least help instruct the growing child in some of the essentials of attention to physical culture? Will we continue our inactivity and general physical laziness, and allow the osteopath and chiropractor to passively exercise us, or will we see the benefits of prescribed voluntary exercises and have the incentive to enforce action?

It is really a serious situation, and time alone can give the answer. After all, it does not seem as though thinking people could entirely ignore the fact, as demonstrated by Army enlistments, that so surprising a number of people have static physical defects, that are largely the result of faulty mode of living, and not make some effort toward overcoming such defects.

The United States Public Health Service is still continuing the work of prescribed voluntary exercises. That, experience has shown, is the most valuable means of overcoming defects which were the result of a war injury. It has been clearly shown that voluntary attempts to use a muscle restricted by adhesion is far better than to attempt the same thing by passive manipulation, massage, electrotherapy, or any other modality.

From Sir Robert Jones (1) I quote the following:

"The governing principle in regard to curative work is founded on the knowledge that voluntary movements are of much more value than passive movements. Mechanical movements, such as those produced by Zander machines or other agencies, are usually passive in character and are governed by the machine rather than the patient's mind. The exercises practiced in a curative workshop are of two kinds—the direct and the indirect. The direct work has often to be specially designed—a screwdriver may be employed to supinate the arm, a saw to exercise the elbow, painting to move the shoulder—but, with an ingenious instructor, special ways are constantly designed in order to directly affect the joint involved. The indirect method of attack is often employed. For example, when a man with a stiff ankle is set to plane or saw wood, he unconsciously uses the ankle as he gets interested in the work his hand is doing. The curative workshop does not supplant the massage department of the gymnasium."

Corrective muscle training in such cases as those, resulting from war wounds, are, of course, limited in number to civil practice, but the lesson to be learned is that any muscle or group of muscles can be stimulated more by active voluntary action than by any amount of passive activity, and at the time these muscles are increasing in tone other areas partake of the benefits derived from better nutrition, increased elimination, and other causes.

---

*Read before Syracuse Academy of Medicine, Syracuse, N. Y., April 19, 1921.

What are the underlying causes which produced the defects in the young men and made it necessary to reject them for Army service? What is wrong with our way of living to produce such widespread static defects?

Stand on a busy street corner any day or any time of day and observe the postures and static defects of various people. We will exclude the real cripples, those with evident spinal disease, or neglected club feet, or congenital hip dislocations and many other organic lesions and confine our attention to the functional troubles. The noncritical observer will see many peculiarities of gait and posture, which are obvious. The critical observer will say that about fifty per cent. of all passersby have evidences of the results of bad habits in the use of their muscles. A few of the frequent cases seen: the girl in her late teens or early twenties, head thrust forward, shoulders rounded, hips forward, knees slightly bent and pumps on her feet, with two and one half inches or higher heels—the real slumped posture, which is the result of lack of physical culture more than of either high heels or the decree of fashion. The general slouchy appearance of the boy of the same age, flat chested, flat lumbar spine and possibly flat feet. He is making no effort to hold a decent posture. He has never had instructions as to proper methods of breathing or been told that his feet were wrong and he has acquired the lazy habit. The older woman inclined to adiposity, attempting to walk in shoes too small for her feet, the postural defects not entirely masked by the corset, abdomen too large and pendulous, lumbar spine with too much curve, probably causing frequent backache, a condition very often due to inefficient general musculature and especially to weakened and flabby abdominal muscles. Another woman about the same age, slim and angular, holds herself rigid, walks with a decided toeing out. She has never been taught how to relax and properly use the muscles. The toe out may be the result of instruction in childhood when most mothers considered it polite and genteel to always toe out when walking. Then the children, from the little ones just able to get around to those of the adolescent age, these are the ones whose habits are in the process of formation, and it is in this period that the most constructive work can be done in the way of muscle education. Most cases of scoliosis, flat feet, stoop shoulders, etc., can be prevented by insuring normal muscle function in early life. The great majority of people could be benefited physically and mentally and their lives prolonged by systematic exercises, graduated according to their general condition. This is a perfectly selfevident truth, yet we go along just the same and make no effort to overcome our defects. There is increasing evidence that some of the parents are more frequently noticing postural defects in their children and are asking advice and help. Will we continue to advise, as in the past, that the child will outgrow it, or that it amounts to nothing, or will we endeavor to overcome the fault by instruction to the child or parent? Is it better to trust all to nature and the natural activities of the child, or is it better to assist and at the same time prevent formation of bad habits?

Flat feet or congenital weak feet are common in childhood. Active symptoms are not common until much later age unless the condition is extreme and pronates the shoe. The treatment to be advised in all cases is special instruction and exercises for the tibialis anticus and the short flexors of the foot. Functional scolioses, those in which organic changes are not present, can all be permanently cured by proper exercises to balance the muscles of the spine and trunk. Most children need to be taught how to breathe properly, even after removal of the tonsils and adenoids or other obstructions; respiration is subnormal. Round and stooped shoulders can be prevented by exercising the right muscles. The nearer normal the general musculature and posture of the child, the more difficult it will be for the child to get away from the good shaped child's shoe to the monstrosities later worn by men as well as women.

Corrective gymnastics are of great value in adult life as well as in childhood. Most of us become less and less active physically as we grow older and muscles weaken, general nutrition suffers, a vicious circle is formed, and there is no incentive to exercise. Competent instruction is necessary and should be continued long enough to accomplish results.

The value of patient painstaking instruction in muscle exercise as applied in cases of infantile paralysis has been and is being clearly demonstrated in the New York State clinics. Many remnants of muscles have been built up to do the full duty of the original muscles. If by special attention a muscle so attenuated that it was thought to be completely paralyzed can be made serviceable, it is certain that by special attention to a muscle only a little below par it can be made to prevent a static defect, which is the result of inaction of this muscle. So in the weak feet of the adult, those that may have been functionally perfect for many years, and now have begun to weaken a little, or the flabby, weakened abdominal muscles of middle age, the flat chest, the deviated spine, and many other weaknesses, can be improved by exercises applied in corrective manner. Not only is there improvement of the local condition, but general nutrition is always benefited and the effects are far reaching.

In placing stress upon the value of special corrective gymnastics, I do not wish to be understood as in any way belittling the value of gymnasium work as conducted by the Y. M. C. A., Y. W. C. A. and other organizations, and not the least of their points of value is that of forming the habit of exercise. Routine gymnasium work does not always accomplish the desired results, and the chief danger lies in the fact that many of its patrons have not a good muscle balance at the start, that exercises are not graded to the needs of the individual, and as a result some group of muscles may become overdeveloped at the expense of a weaker opposing group, which was weak at first and has become further weakened by overstrain.

If the growing child could be instructed and trained in the habit of correct posture, how to breathe, and how to use his feet, it would be of great value, better general health, and freedom from local distress, such instruction might well be given in the public schools. Central New York as well as other regions needs an institution to be maintained by the state or municipality where cripples from paralysis or other causes and the more serious static defects can be scientifically treated physically and mentally. It would not only be humane, but also economic. Very many can be rescued from a life of dependence and made selfsupporting citizens.

I am sure that if the people would acquire the habit of systematic physical exercise, and persist in the habit, there would be less work for the osteopaths, chiropractors and others who get pay for exercising people who are too lazy and do not know how to exercise themselves, and that the proper corrective exercises applied to the child would induce a much more efficient physical showing if there should be another draft law twenty years from now, as well as increase the efficiency of all those not included in the draft.

New Treatment of Epilepsy.—E. Christin (*Schweizerische Medizinische Wochenschrift,* February 3, 1921) emphasizes the fact that the results of bromide treatment have not been wholly satisfactory. It has been shown that smaller doses of bromides suffice, if the amount of chlorides in the diet are reduced as much as possible. Sodium bromide is better than the potassium salt, as the depressant action of potassium on heart and circulation is undesirable. On the other hand, it appears irrational to employ the stimulating ammonium salt. A large number of other drug combinations are held to have failed the test of practical application. It is more difficult to judge the result of thyroid and parathyroid medication in epilepsy, as the reports of various authors are contradictory.

The writer reports more favorably on luminal, which differs from veronal only in the substitution of one of the latter's two ethyl groups by the phenyl radicle. It is claimed that its sedative effect is greatly increased. The daily dose consists of two grains in cachets. The soluble sodium derivative is suitable for hypodermic administration. The advantage of luminal rests in the fact that it exerts its sedative action without causing a feeling of depression and torpor. Rashes, vertigo and other noxious by effects appear to be very rare. A large number of observers recommend luminal in cases of epilepsy where attacks occur frequently. It acts more quickly and surely than bromides, but it is not as useful in petit mal.

Pierre Marie has used potassium boricotartrate in doses of forty-five grains a day. Again it is claimed that attacks of epilepsy are prevented without the depression often accompanying bromide therapy.

A new conception of the nature of epilepsy has been brought forward by Hortenberg. This author emphasizes the large share inhibition has in the complete picture of epilepsy. Evidence of cortical inhibition is shown not only more frequently than actual convulsive attacks, but inhibition usually precedes individual fits. It is pointed out in this connection that in cases of bradycardia a suspension of systole for three seconds gives rise to vertigo, for from seven to eight seconds to syncope with fall, and from twelve to fifteen seconds to epileptiform convulsions. This leads to the suggestion that the different forms of epilepsy depend on the duration and distribution of inhibition on the different cortical centres. Circulatory deficiency leading to inhibition may result from a variety of causes. Similarly, actual irritation may be effected by unduly high carbon dioxide concentration in the cerebral blood and tissues. The main interest of Hortenberg's theory of inhibition lies in the fact that he evolved a course of treatment by strychnine. Even the formidable doses employed by him never resulted in epileptic attacks, but rather improved the general condition of the patients. Up to two grains of strychnine were administered orally.

The author concludes that luminal and perhaps potassium boricotartrate are the only important new agents in antiepileptic therapeutics.

An Operation for the Cure of Acquired Urinary Incontinence in the Female.—E. Sauté (*Archivio Ital. de Chirug.,* Vol. I, December, 1919, 247) describes his method as one that may be applied in any case of acquired urinary incontinence, and with it he has obtained many successful results.

It is based upon the principles of all other operative procedures applicable to the cure of urinary incontinence, such as

1. To bring about a narrowing of the canal through which the urine is to flow;
2. Using part of the new structure in producing valves;
3. Elongation of the urethra from which the new canal is prolonged;
4. And giving the newly formed urethra a greater curvature than normal.

He obtains all this by forming a new canal in the anterior walls of the vagina, which is connected with the preexisting urethra, or what has been left of it.

His operation is short: he starts at a semicircular incision over the inferior half of the inferior meatus, prolonging each end laterally to one half the length of the former circular incision. From the middle of these lateral prolongations he makes perpendicular incisions running parallel as far as the base of the clitoris. Thus two flaps are made, the thickness of each being one half the length of the original transverse prolongation.

He then sutures to produce a new canal, starting his first stitch, which includes periurethral tissue, taking up the adjacent connective tissue of the posterior fascia of the flap made. The same is done on the other side. With as many sutures as possible, the inner edges of the flap are drawn together, the knotting of the sutures forming the floor of the new canal. The ends of the transverse prolongations are brought together, and then the outer edges are sutured together to form the inner side.

Then the urethra is elongated to four cm., the valvular effect being brought about by the clitoris which is enclosed in the canal.

Intestinal Stasis.—Sir James Cantlie (*Journal of Tropical Medicine and Hygiene,* January 1, 1921) refers to the prevalence of intestinal stasis among natives in tropical countries. Among the poorer classes the bulk of the food taken is of the nature of "binding" food, and presents none of the laxative qualities embodied in the oatmeal, bread, and certain fresh vegetables largely consumed in temperate climates. In meeting the resulting tendency to stasis, the method of defecation plays the most important part. The natives assume the squatting position, whereby the thighs are brought up against the front wall of the abdomen on either side, thus compressing the very parts, viz., the cecum on the right and the iliac and rectal colon on the left, where stasis chiefly obtains. In the position of the body seated on high closet seats the powers of expulsion are greatly reduced and the feces reach and rest upon a horizontal rectum instead of the more vertical rectum in the squatting position. In temperate climates constipation became a prominent factor with the advent of water closets. The author recommends a water closet with a low seat, only four or five inches above the level of the floor, in order that an approach to the squatting position may be obtained. Another cause of stasis is insufficient ingestion of laxative foods such as oatmeal, plain bread in place of toast, cooked green vegetables, Yorkshire pudding, and fruit early in the morning and at 11 a. m. in quantity. The combined juice and pulp of the orange promote colonic activity, and likewise the cauliflower leaves and stalk, whereas the flower only will not. An hour's sharp walk daily is also of assistance.

Benzyl Benzoate in Pediatric Practice.—John Ruhräh (*American Journal of the Medical Sciences,* January, 1921) says that benzyl benzoate may be used in place of atropine wherever a relaxing effect is desired on spasm of smooth muscle. He has used it sufficiently to be able to recommend it in bronchial asthma, spasmodic bronchitis, gastric or intestinal colic, hiccough, and spasmodic constipation. It has been recommended by others in excessive peristalsis. In whooping cough its action is often most beneficial, but the results are uncertain, as is the case with all other antispasmodics in this disease. In general convulsive conditions not dependent on organic lesions of the central nervous system, especially in the newborn, the drug will be found of benefit.

Seminal Vesiculitis.—John H. Cunningham (*Boston Medical and Surgical Journal,* February 24, 1921) suggests that patients with a persistent urethral discharge be examined to determine the condition of the prostate and seminal vesicles, as well as the condition of the anterior urethra. There is a group of patients with infection in the seminal vesicles and prostate which cannot be cured of a urethral discharge except by destroying such lesions by surgical measures. The possibility of foci of infection in the seminal vesicles and prostate should be included in the differential diagnosis of infectious arthritis. Patients with such foci of infection and metastatic disturbances should be subjected to surgical drainage of the foci if improvement by nonoperative treatment is not satisfactory.

Therapeutics of Weak Labor Pains.—H. Guggisberg (*Schweizerische Medizinische Wochenschrift,* February 3, 1921) discusses the actions of and indications for the common ecbolics. He warmly recommends pituitary gland preparations, but he points out that results are likely to vary with the individual preparation used and with the peculiarities of each individual uterus. As it is impossible to determine the nature of the uterine response beforehand, he urges the initial use of small doses. Intravenous administration secures more rapid and certain action. Preparations of ergot are still the mainstay after labor. If administered before complete expulsion of fetus and placenta, tetanic contractions of the uterus may occur.

To test the action of quinine a number of experiments were undertaken with isolated organs. In low concentrations uterine contractions became more frequent, and continued to be so for a longer period than with pituitary extract and ergot. In large doses quinine paralyzed after a short initial period of marked excitation. It is interesting to note that, unlike ergot, quinine never causes tetanus of the uterus. Quinine has apparently no effect on the pregnant uterus, as distinct from labor. The dose during labor should be four grains of quinine sulphate, to be repeated after an hour. This drug has also proved useful in the treatment of abortions, especially in septic cases, where nonoperative treatment is advocated in the presence of active infection. Others have reported favorably on the addition of quinine to the narcotics used in the induction of twilight sleep. Quinine is recommended in the opening stages of labor, pituitary extract during the second stage, and ergot at the end of labor. The author further mentions investigations carried out with various combinations of drugs. The most favorable results were obtained with a combination of quinine and pituitary extract, and of ergot with extract of placenta. The author states that he proved the existence in the placenta of substances stimulating uterine contractions. Their action appears to render the uterus more sensitive to normal and therapeutic stimuli.

The Mechanical Aids in Diagnosis of Lesions of the Upper Urinary Tract.—J. S. Eisenstaedt (*Journal Indiana State Medical Association,* June, 1920) discusses: 1. Cystoscopic examination; 2, ureteral catheterization; 3, röntgen ray examination; 4, combination of two or all of the above plus the injection of a fluid, or the passage of an instrument which appears opaque in the röntgen ray plate; 5, chromocystoscopy. The fields of usefulness of these methods overlap, and each procedure may be made to supplement the other, but the use of these mechanical aids does not and should not do away with careful clinical and laboratory methods. Uranalysis and röntgen ray examination should be routine procedures when even the slightest suspicion points toward urinary tract lesions. The necessity for the use of these procedures lies in the fact that many serious lesions of the upper urinary tract may pass under the mask of other pathological conditions and cause symptoms referable to remote or widely differentiated structures.

The Action of Quinine on the Pregnant Uterus.—Hugh W. Acton (*Lancet,* January 29, 1921) investigated the action of quinine on the pregnant uterus in a series of experiments with laboratory animals. He found that both longitudinal and circular muscle fibres of the uterus were stimulated equally, so that after large loses of quinine, in spite of violent contractions, the fetus was not expelled, owing to firm closure of the os. Quinine in a concentration of one to 44,000 produces a tonic spasm which would lead to fetal asphyxia if sustained. Such a concentration could only be obtained if the patient was almost poisoned by the drug. Concentrations of one to 150,000 occur after the intake of rather large doses of quinine. In such cases the strength of intermittent uterine contractions is increased, and in the presence of any abnormality, such as an unduly patulous os, abortion might occur. The author suggests, however, that abortion in the cases of women suffering from malaria is more likely to be due to primary fetal death through maternal hyperpyrexia, than to be due to the action of quinine. These considerations lead him to the following therapeutic recommendations in the case of pregnant women suffering from malaria:

1. The first object is the control of the fever by quinine. The patient's temperature should be kept below 103° F. by sponging.
2. Large doses of quinine should be avoided. Twenty grains a day, administered in frequent small doses, is thought sufficient.
3. General measures for the prevention of miscarriage should be adopted, such as complete rest in bed and the judicious use of opium.

Silver Salvarsan in the Treatment of Syphilis.—Charles M. Walson (*American Journal of the Medical Sciences,* March, 1921) says that silver salvarsan is the strongest spirocheticide, as well as the least toxic of all arsenobenzol preparations, to the best of present knowledge. It deteriorates rapidly when exposed to air, and this deterioration is recognized best when it is placed in solution. The technic of administration requires strict asepsis; freshly distilled water in the proportion of ten c. c. to each tenth gram of silver salvarsan; the complete solution of the silver salvarsan powder before administration; proper precautions to prevent extravasation of the silver salvarsan solution into the surrounding tissues, and slow administration, i. e., not less than one minute. If silver salvarsan is used alone probably the best procedure is as follows: Begin the treatment with one tenth gram of silver salvarsan, increase the dose to two tenths for women and twenty-five hundredths for men as a maximum dose, with an interval of four days between doses, and never give more than two grams in any one month. The results obtained in primary syphilis on the Wassermann reaction are as good, if not better, than with any other arsenobenzol preparation used in combination with mercury. The Wassermann reaction reversed to negative as rapidly in secondary syphilis with mercury and silver salvarsan as with any other arsenobenzol preparation with mercury. Mercury should be given with it in the treatment of syphilis. Its effect on all clinical manifestations is rapid. Alarming results were not seen. Constant vigilance is essential in the administration of all arsenobenzol preparations. Particular attention should be given to the patient's weight, a beginning erythema, functional kidney and liver tests.

Treatment of Septic Abortion.—Hillis (*Surgery, Gynecology and Obstetrics,* December, 1920) reports on observations carried out on two hundred cases. One half of these cases were curetted; the other half received no active local treatment. It was clearly established that the second group of patients lost fever more rapidly, had a lower mortality, fewer complications, and stayed in hospital for shorter periods than the first group. He concludes, therefore, that cases of septic abortion should receive no local treatment until the activity of the septic process has subsided, as indicated by a normal temperature for about five days. Cases of dangerous hemorrhage would naturally be an exception. The author is equally emphatic on the advisability of curetting, once the afebrile stage is reached, as thus subsequent complications are avoided and the stay in hospital shortened materially.

Diagnosis and Treatment of Injuries to the Peripheral Nerves. — Elesberg and Woods (*Archives of Neurology and Psychiatry,* December, 1919) give the results of the observations on 170 patients who had injuries of the peripheral nerves. These cases were studied at the U. S. General Hospital No. 1. Some of the problems encountered and the various methods devised to solve them are given. The diagnosis of the type of injury is discussed, as well as the treatment which the various types of injuries depend. It is stated that no final conclusions have been drawn, as several years should elapse before this is done. The finer anatomical structure of the nerves is discussed, and the anatomical basis and principles of the technic of nerve suture are described. The illustrations serve to show the various types of injuries and the operative procedures.

Treatment of Scleroderma.—H. Dufour and Debray (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris,* February 3, 1921) report the case of a woman aged twenty-eight years suffering from scleroderma over the hands and forearms, face and forehead, lower extremities, and, to a lesser degree, over the chest and abdomen. There were also small telangiectatic spots over the face. The fingers had been sensitive to cold, turning white upon exposure and later becoming permanently pale. By way of treatment the patient's forearms were kept swathed in cotton, covered with an impermeable material. The result of this measure, acting through local prevention of heat dissipation, was a complete transformation in the appearance of the forearms. While apparently covered with a smooth, rigid, leathery layer at the time of admission to the hospital, the skin in these areas regained an absolutely normal consistency and appearance. The heating procedure is thus available as a treatment for scleroderma. Through its efforts, moreover, it affords added proof of the influence of exposure to cold in the production of certain syndromes, such as scleroderma, idiopathic paroxysmal hemoglobinuria, and icterus in the newborn.

The Traumatic Abdomen.—Rowland F. Webb (*Canadian Medical Association Journal,* February, 1921) points out the success that may be attained if operation be done early, as well as the failures that will be certain to come if operation is delayed. If you wait for the symptoms of hemorrhage and shock to appear, it is indeed too late, and since early interference offers the only hope for the patient in case of severe visceral injury, there should be no question as to operation. No harm can be done to the patient by the ordinary exploration of the abdominal cavity, even if there be no internal injury; but, in case such injury is present, operation offers the only hope for the patient's recovery.

Since this stand has been taken in regard to abdominal injuries he has encountered rupture of all the important abdominal viscera except the stomach. A total of twenty cases shows a rupture of the bowel in twelve cases, a rupture of the bladder in three cases, the liver in two cases, the kidney in two cases (each unilateral, fortunately), and one case of rupture of the spleen. The ileum is the most common site of injury of the bowel.

The time of operation plays an important rôle in the prognosis. Nine cases operated upon within three hours after injury showed an uneventful recovery, except one in which a bleeding mesocolic vessel was overlooked. Six cases operated upon after three hours following injury and before ten hours gave only three recoveries, with an equal number of deaths from hemorrhage and peritonitis. Five cases operated upon ten hours after injury showed recovery in but one case.

A Study of Tonal Attributes.—Gilbert J. Rich (*The American Journal of Psychology,* April, 1919) has arrived at the following conclusions:

1. As determined by the method of paired comparisons, the pure vowels do not occur at the same point for all observers, nor do they lie an octave apart.

2. Judgments of vocality are made upon a perceptual and not upon an attributive basis. Some observers have these perceptions ready formed from previous experience, while in others it is necessary to build up the perceptions before undertaking experimental work upon the vowel qualities.

3. Judgments of pitch are made upon an attributive basis.

4. Judgments of brightness are similarly made upon an attributive basis, but are to be identified with judgments of pitch.

5. Previous experiments establishing the attributive status of volume and showing that it follows Weber's Law have been verified with pure tones.

6. It is possible for observers to report upon tonality in the sense of musical quality. These judgments may tentatively be accepted as indicating an attribute.

7. The three attributes, pitch brightness, volume, and tonality, are independently variable, in that: 1, their limens, within the range employed, occur in the ascending order, pitch brightness, tonality, volume; and, 2, the limen for pitch brightness decreases toward the centre of the scale and increases beyond it; the limen for tonality increases steadily, without following Weber's Law.

Blows Upon the Eyeball.—G. Herbert Burnham (*American Journal of Ophthalmology,* November, 1920) reports a case in which a man received a severe blow on the eye followed by swelling and discoloration of the lids but no apparent injury of the eye itself. Yet at one spot of the ciliary region there was extreme tenderness upon the slightest pressure, and there was continuous pain at this spot, although there was no external evidence to show its position. The shock to the nervous system was so great that the patient was kept in bed for three weeks, and the eye was kept under atropine for a month. After the effects of the atropine had passed off any attempt to read caused decided pain and had to be given up. At the end of three months if he used his eyes freely, this eye felt quite uneasy, but this feeling gradually passed away. Burnham ascribes the trouble to a bruised condition of the ciliary processes and the corresponding sclera. The medicolegal aspect of the case is brought out by the opinion of another oculist, after a careful examination, that no reason could be found why he should not give the eyes full work as the eye seemed to be normal in every way. Burnham says he has seen two other similar cases in which several months had to elapse before even ordinary use of the eyes could be borne.

On the Treatment of Acute Empyema.—A. T. Bazin (*Canadian Medical Association Journal,* February, 1921) thus summarizes his paper: Infected pleural effusion should be treated by simple aspiration and not by operation. Frank pus in the pleural cavity is an indication that an abscess, large or small, has been walled off by adhesions, that local and general immunity to the infection is being established and operation is indicated without further delay. The operation best suited for all cases is resection of rib over the most dependent portion of the cavity, exploration and gauze curettage of the walls, continuous drainage and early removal of drain. By this means a cure with complete expansion of the lung is effected in from eight days up, according to the period of time between the appearance of pleural abscess and operation. Radical operation is not an emergency treatment to meet urgent symptoms. These should be relieved by aspiration, and operation delayed. Early diagnosis and prompt treatment of acute empyema will reduce chronic empyema to an irreducible minimum.

Tortuous Temporal Arteries.—M. B. Schmidt (*Zentralblatt für Pathologie,* Band 30, No. 3) reports an investigation on the bearing of tortuosity of temporal arteries on the general state of the arterial system. He undertook detailed microscopical examinations in over fifty cases of persons between the ages of twenty and thirty. In sixteen cases he found characteristic tears of the intima, and in two cases calcification and actual destruction of the lining of the artery. The author has come to the conclusion that the lesions depend on local developmental defects of the intima of the temporal artery. The initial tears lead to local fibrosis, occasionally to calcification, and the artery becomes tortuous. In his opinion tortuosity of the temporal artery in young people cannot be considered a premonitory sign of commencing general arteriosclerosis.

The Treatment of Diffuse Suppurative Peritonitis.—J. S. McEachern (*Canadian Medical Association Journal,* February, 1921) summarizes the treatment as follows: 1. Early removal of the cause by operation. 2. Provision for the escape of pus by suitably placed drainage tubes. 3. Posture to favor the gravitation of pus into the pelvis, keeping the intestines at rest as far as can possibly be done by means of interdicting all food and water by mouth and the free use of morphine to lessen peristalsis and control pain. 4. Lessening of shock by cutting off painful stimuli by means of morphine. 5. Introduction of water into the system by rectum to flush kidneys and carry away toxins. 6. Avoidance of purgation at every stage of the disease. While it is essential to prevent even water reaching the stomach, it is permissible and desirable that the patient should be at liberty to rinse the mouth as frequently as desired. For this purpose water, either plain or flavored with fruit juices, can be used. Permitting the patient to chew gum helps to keep the saliva flowing and renders them more comfortable.

Serum of Fracture Cases in the Treatment of Delayed Union.—T. Pétrault (*Paris médical,* February 12, 1921) reports experiments on dogs showing that underfeeding causes delayed union. Upon injecting serum from dogs recently subjected to fracture and resuming normal feeding, union was markedly accelerated as compared to dogs in which merely the normal feeding was resumed without administration of serum. Horse serum proved therapeutically inactive and serum from dogs without fracture only doubtfully active. Apparent success from similar treatment was likewise obtained in four wounded men with delayed union, who were given fifteen mils of serum from convalescent or recovered cases of fracture in which repair had taken a normal course. In these cases union took place in twenty-six, twenty-seven, sixteen, and eighteen days, respectively, after the injection of serum.

Pseudotumors of the Uveal Tract.—Edward Jackson (*American Journal of Ophthalmology,* June, 1920) says that pseudotumors of the uveal tract occur, which, on first examination, present every appearance of true tumors—malignant neoplasms. These masses vary widely in character and causation. After careful and prolonged tests for syphilis and tuberculosis, the widest range of investigation may throw little light on the origin or the essential character of the lesion. Malignancy of such lesions can usually be excluded by watching them over a period of several months, or even years. Atrophy of adjoining parts of the choroid, or pigment deposits such as accompany choroidal atrophy, oppose the idea that the lesion is really a neoplasm. Very careful drawings should be made when the case is first seen, and the appearances found subsequently compared with them to determine if the tumor is extending. So long as the mass does not increase, watchful waiting is justified, if the eye still retains vision. If the tumor is malignant, early removal is of course to be recommended. But for a choroidal sarcoma in the first stage the risk from a few weeks' delay until it shows unmistakable progress is problematic, and scarcely to be weighed against the loss of a useful eye on a doubtful diagnosis. If the affected eye is already hopelessly blind, that is another matter; it should be removed on the mere suspicion of malignancy. But for a seeing eye, true conservatism requires careful observation with full records of the conditions present and delay until time makes a more positive diagnosis possible.

Vesical Calculi.—Walter Jones (*Canadian Journal of Medicine and Surgery,* April, 1921) prefers litholapaxy for medium sized stones up to one and a half inches in diameter, where there is no stricture to prevent the passage of a large instrument, and where there is no enlargement of the prostate. When there is a foul cystitis associated with a mild pyelonephritis, lateral lithotomy is probably the safest operation. When the prostate is enlarged litholapaxy should not be done. In children suprapubic cystotomy he considers to be the safer operation; the bladder may be closed without a drain. In adults, if there is no infection, a suprapubic cystotomy may safely be closed and a wick left in the space of Retzius. In skillful hands litholapaxy is a comparatively safe operation; occasionally patients may develop pyelitis and run a stormy convalescence.

Latent Antrum Disease.—H. B. Lemere (*Annals of Otology, Rhinology and Laryngology,* March, 1920) emphasizes the uncertainty of transillumination in these low grade infections of the antrum, where frequently no free pus is present in the cavity but only an infected mucous membrane which does not produce a shadow. Many infected antra are thus not recognized because of the lack of the shadow and of the pus under the middle turbinate. The author has learned to rely very greatly on the condition of that lymphatic tissue in the pharynx lying in a vertical streak immediately posterior to the posterior fauceal pillar. When infected secretion is being drained into the pharynx this tissue becomes acutely congested and stands out as a decidedly red, swollen band, and this always means either acute or chronic nasal infection. Much dependence is placed on the x ray. Three plates are taken in different positions, each picture acting as a control on the others. A slight degree of cloudiness in every position is quite significant, and combined with the enlargement of the pharyngeal lymphatic pillar is usually considered diagnostic of a low grade infection.

The Early Diagnosis of Typhoid and Paratyphoid Infections.—Henry J. Goeckel (*Journal of Laboratory and Clinical Medicine,* January, 1920) identified typhoid and paratyphoid bacilli in the urine in three cases and states that it is possible to identify these organisms by agglutinins before the blood shows a positive Widal reaction or a typical count. This method is said to be more definite than is the identification of agglutinins in the patient's blood serum, and is especially indicated in patients who may have a natural or acquired agglutinating capacity due to previous infection or through the use of vaccines.

Proceedings of Societies

NEW YORK NEUROLOGICAL SOCIETY.

Three Hundred and Eighty-eighth Regular Meeting, Held at the Academy of Medicine, April 5, 1921.

The President, Dr. Foster Kennedy, in the Chair.

Presentation of a Case of Polycythemia with Nervous Symptoms.—Dr. Moses Keschner outlined the characteristic features of polycythemia and presented a patient suffering from the disease. Polycythemia, or erythremia, is a condition of the blood in which the number of red blood corpuscles is increased above the normal average of 5,000,000 per c. mm. It may occur in normal persons as a result of physiological stimuli or in a disease as a result of pathological stimuli. It may be relative, i. e., without real overproduction of red cells. In absolute or true polycythemia the total number of red cells in the body is actually increased. The true form is a disease of unknown origin characterized by a persistent erythremia due, it is thought, to excessive erythroblastic activity of the bone marrow, or to a failure of destruction of the red blood corpuscles. Some also ascribe it to faulty internal secretions, especially of the adrenals. The nervous manifestations of polycythemia have hitherto received very little attention, in contrast to those of the anemias, which have been extensively studied. The most commonly encountered symptoms are headache, dizziness, visual disturbances, paralysis (motor and sensory), pain, muscular twitchings, convulsions, speech disorders, mental, vasomotor and trophic disturbances. There is general localized pain, a vague aching and feeling of fullness and throbbing over the entire body, especially the head. Mentally some of the patients show defects of memory and general symptoms of neurasthenia; they are emotionally unstable and have a tendency to become easily depressed or excited and at times delirious. Insomnia is a common symptom. In the vasomotor sphere, hyperhidrosis is frequently found. Excessive salivation with nausea after swallowing the saliva, and anorexia were the chief symptoms which brought the patient presented to seek medical advice.

Eye symptoms are common and frequently the first noted. Some patients complain of easily induced fatigue from the use of the eyes. Palsies of the external ocular muscles are quite common. These may give rise to diplopia. Scintillating scotomata, transient blindness and hemianopsia are not infrequent. Ascher has described in this disease a form of asthenopia without refractive errors in which the patients give a history of repeated but unsuccessful efforts to get proper adjustment of glasses. The ophthalmoscope reveals changes in the fundi which are characteristic of the disease. The veins are distended and engorged so that they appear much larger and darker than the arteries; they are tortuous and may show varicosities. The disk may be normal, or slightly reddened, or it may have the appearance of a mild form of optic neuritis.

The nervous symptoms in the anemias are due to degeneration of the neurones brought about by toxemia. The pathological basis of the nervous symptoms in polycythemia are vascular. They may be thrombotic or hemorrhagic, and cause softening which is not due to arteriosclerosis.

The patient, a Russian tailor, aged thirty years, was admitted to the Mt. Sinai Hospital complaining of headache and salivation, from which he had been suffering for the last eight years. The salivation as well as the headache was almost constant. A summary of the symptoms showed attacks of tonsillitis in the past, headache, salivation, dizziness, vertigo, blurred vision, anorexia, hemorrhoids, congestion of face and eyes, insomnia, uncontrollable hemorrhage after tonsillectomy, flushes of heat and cold, tinnitus, epileptiform seizures. Blood examination showed hemoglobin, 170 per cent. (Kuttner); 9,800,000 red blood corpuscles; 340,000 blood platelets, and 8,000 white blood corpuscles. The red cells were microcytes and showed some slight central pallor. A later examination showed hemoglobin, 170 per cent. (Kuttner); 11,456,000 red blood corpuscles; 410,000 blood platelets, and 7,600 white blood corpuscles. The color of the blood stream in the veins of both disks was reported to be dark purple, much darker than normal. The arteries were normal. No other fundus changes were seen and the visual fields were normal. The patient was treated with atropine until there was marked dryness of throat and dilatation of the pupil, but the salivation did not diminish, nor did local astringents applied to the mouth have any effect on it. After the withdrawal of ten ounces of blood from the median basilic vein, the patient stated that his headache and dizziness were slightly relieved.

Dr. B. Sachs asked concerning the patient's subjective state. Dr. Keschner resummarized the chief symptoms. The patient when asked if he felt dizzy or sleepy replied in the affirmative. Dr. Sachs asked how the disease could be recognized.

Dr. Keschner said that it was recognized in this patient by salivation, headaches, attacks of dizziness, and epileptiform seizures. It was first suspected when trying the Wassermann test, when great difficulty was experienced in drawing blood from the vein. There was no evidence of other nervous disturbances. The appearance of the veins in the disks and the headache were the main factors. Dr. Keschner's theory was that the salivation was central. It was not affected by the atropine. The saliva had not been examined.

Dr. Dana said that a diagnosis of polycythemia could not be made from any nervous symptom.

Dr. J. H. Leiner said that in the last six months he had seen two cases of this disease in which there were no nervous manifestations at all. An increase in blood cells was present. The throat was curiously stippled like a scarlet fever throat. There was black pigmentation along the mucosa, a characteristic congested eye, and a cyanotic flush of the face. A woman, fifty-five years of age, who had polycythemia vera, showed a high blood pressure. He had seen other cases that he planned to present before the Section on Skin Diseases, in which there had been no nervous manifestations. Some of the skin conditions he thought were endocrine in origin.

Doctor Rosenthal (by invitation) said that a different type of polycythemia was present with the high blood pressure. It was described a long time ago by Geissler and was called polycythemia hypertonic. Here the blood pressure and pigmentation were not so marked. In these cases tuberculosis must always be ruled out, since polycythemia might be secondary to it.

Doctor Keschner concluded the discussion by referring to the usual conception of erythroblastic overactivity of the bone marrow as well as the reduction in the normal destruction of the red cells as the cause for the condition. It had been treated by x ray exposure of the spleen and of all of the long bones, with improvement. Some writers also report encouraging results from this treatment, while others say that some of these cases get better without treatment, and that the improvement simply represents a spontaneous remission. The injection of adrenalin causes an increase in the red blood cells. The condition is by some thought to be due to an adrenalemia.

Combined Neurological Percussion Hammer.—Dr. J. H. Leiner demonstrated a combined neurological percussion hammer having the advantages of being compact; half the size of the ordinary hammer when closed, a little shorter when open. The design is that of the Roman battle axe; the balance is very delicately adjusted, and it is weighted by metal and a strip of soft cushion rubber to prevent trauma. The back had originally been made of a soft piece of rubber. It is now replaced by a harder piece set in by a set screw. The original hammer also turned from side to side and swerved. In this model, therefore, a groove has been cut in the bottom of the shank with a pin running through it. At the other end of the hammer there are three tubes to contain the instruments commonly used. These are a needle, very sharp, which can be pushed out by a little button, and set in fine German musical steel; a colored orange stick to test color vision which snaps back when not in use; and a camel's hair brush for touch experiments. This hammer obviates the necessity of always carrying pins with one. It can be used for making the Babinski test and as a tongue depressor; and it also makes cotton wool unnecessary. A limited number of these hammers has been made. There are 150 now available at a cost of $7.50 each. When more are manufactured the cost will diminish. They are made by N. A. Low & Co., New York.

Doctor Sachs said that he had been using this instrument for the past weeks and found it the greatest help.

A Contribution to the Histopathology of Porencephalus.—Dr. J. H. Globus emphasized the close relationship of the defects met with in porencephalus and the inflammatory encephalitides. The striking disproportion existing between the unusually great loss of brain substance and the relatively mild degree of functional disturbance has always been of interest to the neurologist and neuropathologist. Hitherto gross anatomical observations have been made to the almost complete exclusion of investigation of the minute pathological changes.

The term porencephalus was first adopted by Heschl in 1859 to designate such defects in brain substance as are characterized by cavity formation in the cerebral hemispheres. Heschl assumed that this loss of brain substance should be attributed to faulty development owing to injury during the intrauterine life to the anlage of certain parts of the brain cortex. His conclusions were based on gross anatomical studies. In a later publication he admitted that a porencephalic defect might be due to a retrogressive, destructive process in the brain tissues occasioned by occlusion of cerebral bloodvessels. In 1882 Kundrat reexamined all of Heschl's specimens and added about twelve brains from his own collection. His observations, based on gross anatomical studies, also led him to conclude that most of the porencephalic defects are congenital, although infrequently they may be acquired during extrauterine life. Hemorrhage, thrombosis, embolism, violent uterine contractions, hydrocephalus, anemia and psychic disturbances, occurring to the mother during the period of pregnancy were factors in their production. The porencephalic loss of tissue may often be so pronounced that the individual dies early, yet in some instances the destruction, if it does not involve vital centres, permits the individual to mature, although physical and sometimes mental deficiency becomes increasingly apparent in the course of development. Relative hypertrophy of the opposite hemisphere is the compensation for destruction or atrophy of part of a hemisphere.

While Heschl limited the term porencephalus to excavations communicating either with the subarachnoid or ventricular spaces, Kundrat sought to widen the term so as to admit to the group other cerebral malformations, which, although not of typical cavity formation, were nevertheless characterized by extensive loss of brain substance and other pathological features similar to those encountered in the typical form of porencephalus. Schultze made the next step in suggesting that porencephalus might be the residuum of an infectious encephalitic process occurring in the infancy of the individual. He denied Kundrat's theory of an anemic encephalitis and concluded from histopathological studies that inflammatory changes occur, and thought the loss of brain substance was due to an encephalitic process infectious in origin. The destructive changes began during the intrauterine life, he believed. Virchow definitely established the existence of congenital encephalitis as the result of infection transmitted by the mother if the latter is attacked during pregnancy by an infectious disease, exanthematous or luetic in character. Strümpell studied acute encephalitis in the infant and concluded that many porencephalic defects begin as early encephalitic processes which lead to scar formation in the cerebral cortex in the same way as is commonly seen in a cord affected by anterior poliomyelitis. In a discussion of the condition, finally Sachs and Peterson point out the difficulty in determining the origin of porencephalus. They do not find anatomical proof of the polioencephalitis of Strümpell, although conceding that some of the many cases of atrophy or sclerosis may have been due to polioencephalitis. Autopsies, however, have shown other conditions to have been present but not encephalitis. Doctor Globus felt, however, that in spite of the doubt thrown on the inflammatory origin of porencephalus, the presence of recent and chronic lesions coexisting with extensive atrophy and a large porencephalitic defect in the case which he proceeded to describe, served as proof for the encephalitic origin of porencephalus.

The patient, eleven months of age, a first child luetic history denied, although the mother had been treated for an inflammatory condition of the cervix prior to and early in pregnancy, grew and developed normally up to the age of four months. Thereafter mental development ceased. There was no physical maldevelopment aside from apparent lack of growth of the head. The child was admitted to Mt. Sinai Hospital on account of the retardation in mental development; diagnosis of congenital microcephalus was made and bilateral subtemporal decompression advised. Physical examination showed the upper extremities spastic and in flexure contracture and the lower extremities spastic. All deep reflexes were exaggerated. The temperature was irregular, ranging from 99.5° to 102°. After the operation there was no change in the patient's condition. Cerebrospinal fluid was noted escaping from the surgical wound. Eight days later several attacks of generalized convulsions developed with only slight neck rigidity. The child then grew progressively worse and died. Autopsy showed striking pathological findings limited to the brain and its meninges. The former was small and out of proportion to the size of the skull, apparently somewhat collapsed due to postoperative escape of cerebrospinal fluid. The meninges over the dorsolateral surfaces of the cerebral hemispheres were thickened in some areas and firmly adherent to the underlying cortex, while in other areas they were exceedingly distended by fluid. The right hemisphere showed particularly markedly atrophied parietooccipital lobes. Here the normal markings of the brain cortex were entirely lost and a stippled, corrugated, granulated surface appeared without trace of gyri or sulci. The vessels were freely movable over the surface. The cortex of the occipitofrontal lobe was extremely thin, particularly over the occipital pole. The left hemisphere showed marked symmetry compared to the right. The frontal lobe showed no first or second frontal convolution, these having been replaced by a granular stippled surface covered in places by thickened meninges. The parietooccipital lobes were similar in appearance to those on the opposite side. The orbital surface of the frontal lobe showed normal orbital fissures and gyri. The ventricles were markedly distended in all their division and with the exception of the frontal lobes left nothing but a shell of the cerebral hemisphere.

Microscopic examination of the changes in the pia arachnoid pointing to a more or less recent inflammatory process are characterized by the presence of macrophages with or without enclosures and with or without vacuolated cytoplasm; endothelial cells grouped in fairly large numbers about bloodvessels constituting an important feature in the cellular infiltration. Small lymphocytes were also present in fairly large numbers. Fibroblasts giving off delicate processes form a delicate network in places. The bloodvessels are much dilated, congested, and display thickening of the adventitia. The transition from the subacute inflammatory process in the meninges over the frontal lobes to the chronic fibrous thickening over the parietooccipital lobes is strikingly abrupt. The majority of cortical vessels are apparently cut off by the meningeal cicatrization; others are strangulated at a point just below their entrance into the cortex by glial changes and in their course deeper in the substance of the cerebral hemispheres are empty or often obliterated and converted into a narrow band of connective tissue. Strangulation and obliteration of bloodvessels lead to sclerotic changes in the cortical and subcortical substance which they supply. These zones of sclerosis are well delimited in correspondence to the areas supplied by the vessels now obliterated at the point of entrance into the cortex. A transition condition between the types of meningeal alterations seen is found in the leptomeninges over the temporal lobe. A well defined increase in fibrous elements with a moderate amount of mononuclear cell infiltration is found. There is fusion of the cerebral cortex with the pia arachnoid alongside of closed or partially closed vessels, brought about by an unusual process of migration of glial elements in the pia arachnoid. Individual glial cells can be seen migrating into the pia arachnoid and larger groups of glial cells are noted streaming into the pia arachnoid membrane alongside of a partially obliterated blood cell. This reaction of glial cells to anemic conditions resulting from obliteration of bloodvessels is thus clearly demonstrated and is in accord with the opinion that glial elements usually react by proliferation to circulatory disturbances in the central nervous system. The active streaming of ectodermal elements into the pia arachnoid, fusing with a tissue derived from an entirely different germinal layer is unusual.

The findings in the leptomeninges in this case make it apparent that the inflammatory process was primary there where it presents the more chronic features noted in the coverings of the parietooccipital lobes. The inflammatory process next involved the temporal lobe and finally the frontal lobes became the seat of the more recent inflammatory reaction. The various areas of the cerebral cortex presented lesions which in degree and character corresponded to the chronicity and character of the disease in the meninges. Slides of sections of the portions of the brain illustrating the striking and characteristic changes were shown, together with sketches of the vessels surrounded by zones of gliosis and the types of cells found.

These observations led Doctor Globus to conclude that an encephalitic process had taken place early in the life of the infant. The extensive destruction and atrophy of the cerebral cortex and the fact that the child during its eleven months of life had had no illness force the conclusion that the destructive process in the brain substance and the resulting porencephalic defect must have been begun in the later part of the intrauterine period and remained active and slowly progressive during the child's life. The fact that the physical development of the child was practically uninfluenced by the loss of brain structure is best explained by the assumption that early in the disease the basal ganglia, midbrain, pons and medulla were not involved so that the child was able to carry on a purely vegetative existence like that of a decerebrate animal.

Doctor Sachs expressed his great interest in the paper and felt that this work corroborated a suspicion which he had expressed some thirty years before. It still remains a question whether all cases can be explained by such defects. The occlusion of one of the branches of the larger arteries is not unknown. He asked whether Doctor Globus had sufficient evidence to show that the porencephalic defect occurred during the prenatal period or whether it could have been developed after birth.

Dr. Foster Kennedy said that only a few days ago he had seen a child with a definite nuclear aplasia of the right seventh and hypoplasia of the right sixth nerves. The mother had been desperately ill with influenza at six months pregnancy. At the time he had thought that the failure to develop was due to encephalitis in the fetus.

Doctor Globus in answer to Doctor Sachs's question again stated that there was absolutely no history of illness in the postnatal life of the child. The mother had had an inflammatory condition early in pregnancy and before conception. Lesions both chronic and subacute had been found which therefore must have taken a long period to develop. The disease must be placed in the later part of intrauterine life or in early childhood. The child had not been sick at all in extrauterine life, leaving the intrauterine period as the only alternative.

Some Features in the Neuropsychiatric Work on Ellis Island.—Dr. B. Onuf, speaking on this subject, said that this was the first time that the question of immigration had been brought before the Society. The aim of Ellis Island was to control admissions to the United States, to exclude undesirables and restrict the entry of those who might become public charges. The question of undesirability, from the medical aspect, involved personal shortcomings and disabilities, transferable diseases, and hereditary factors. Laws were accordingly formulated. Those especially pertaining to medical conditions called for the absolute exclusion by a Board of Special Inquiry of idiots, imbeciles, feebleminded, epileptic and insane, constitutional psychopathic inferiors, and chronic alcoholics. The mentality of physical defectives required certification. The law of exclusion held without appeal for all classes of defectives except the physical, upon which a board of special inquiry passes. The individual may again appeal from the decision of this board, in which case the question is passed on to the Secretary of Labor, who may grant admission under bond.

The medical part of the work at Ellis Island consists in recognizing the types of undesirables. The general procedure in making the necessary examinations and tests is as follows: The immigrants pass before the examiners and medical inspectors in line. At the head of the line stands a physician examining the eyes of every individual to make sure that no cases of trachoma pass. From the survey of the individuals as they pass, a rough general examination is completed, and individuals presenting any abnormality are marked with chalk, the letters to designate the part affected such as eyes, lame, hernia, etc. The patient marked is further examined and investigations sometimes give interesting results. The patient marked L for lame, for example, may show spastic paraplegia, or locomotor ataxia, or hemiplegia, or a progressive muscular dystrophy, a multiple neuritis, etc. Thus the examination of the disturbance of gait may reveal a variety of neurological as well as other conditions, such as a dislocation of the hip, flat feet, etc. The examiner is called upon to differentiate between countless causes. It is also a usual practice in making the routine examination to speak a word or so to each individual and thus elicit a reply and investigate the speech in this way. The general appearance is also diagnostic in many cases, and a diseased condition such as acromegaly, myxedema, or eunuchoidism may first be detected by this alone. A total examination gives further information in regard to muscular atrophies, etc. It is then the duty of the medical officer to certify the neuropsychiatric conditions found. Sometimes the examiners differ. In cases of doubtful diagnosis the individual is usually certified as organic disease of the central nervous system.

The difficulty of arriving at a diagnosis is great. In the hospital it is to the patient's interest to give a thorough history. The immigrant often will not give any information, or if he does it is intended to delude. The diagnosis must be made from the patient as seen and from the questions that he will answer. The same difficulty is met with in examining mental defectives and psychotic patients. Here the Binet-Simon test methods cannot be relied upon because of the variety of standards and environment represented by these aliens. For instance, some immigrants have never seen electric light, they have no knowledge of dates, the number of months in the year, the days of the week, etc. The conditions imposed by foreign languages is also exceedingly difficult. Interpreters miss the points of interest and value to physicians. In a psychotic case, for example, the physician wants to know just exactly what the patient says. The interpreter tries to make sense out of it and thus slurs the abnormalities in the current of thought.

Where a conclusion cannot be reached immediately the alien is sent to the hospital for observation. Ellis Island has a general hospital, a hospital for contagious disease, and a psychopathic ward. Detention is the usual rule. The service in the hospital has undergone great development in the last ten years. Thirty years ago there were no observation facilities. Now there is complete equipment and laboratories. In many cases such as trachoma, mental deficiencies due to hypothyroidism or athyroidism, and other conditions arising from disturbances of internal secretion of one gland or the other, a diagnosis is not made until the result of treatment is seen. In other cases the diagnosis is not made until confirmed by bacteriological examination, as in leprosy, favus, ringworm, etc. Weekly conferences are held at which all interesting cases are presented and discussed, outside consultants come to lecture. etc.

Dr. H. V. WILDMAN, Jr., said that with the great influx of peoples from Southern and Eastern Europe the problem of keeping out those with mental defects was becoming one of the greatest importance. The detection of feebleminded immigrants is a separate and distinct specialty. Suggestions have been made that the Army B test be applied to arriving aliens, but experimental work with group tests in general and the B tests in particular have not given good results. The largest number of mentally defective aliens have been detected by short personal interviews with the individual alien during the line inspection.

A discouraging feature of the work at present is the fact that many cases mandatorally excludable are landed for various periods of time at the discretion of the Secretary of Labor. Lack of proper supervision allows some of these cases to land permanently in the country through various contingencies.

(To be continued.)

◆

Letters to the Editors.

CRITICISM.

NEW YORK, *February 19, 1921.*

To the Editors:

Always assuming the NEW YORK MEDICAL JOURNAL to be an ethical publication and devoted to the progress of medical science, I trust that you will permit an expression of astonishment on observing, in the January 29th issue, two papers prominently given space among the original communications, as if it were expected that your readers would accept them on their face value as scientific medical literature, but which we believe open to serious criticism.

The paper on Fumigation Inhalation Treatment of Syphilis is apparently a report of some cases treated with spirocide by Dr. Joseph P. Burns, formerly of the grade of Major, M. C., U. S. Army, altogether comprising eleven cases, besides one case mentioned in the author's private practice which became salivated by the treatment. Broadly speaking, it seems to be a little less than a frank advertisement of the product of the Spirocide Corporation, whose blatant claims have reached us in the mail, asserting that six treatments with the fumigation pastilles, or at most nine, without any further treatment, effectually remove all signs or evidences of syphilis and produce uniformly negative Wassermann tests in from ten days to three months, in cases in which salvarsan and kindred preparations have been employed without the slightest benefit. The advertisement states that "it has been presented to the Council on Pharmacy and Chemistry of the American Medical Association." Nowhere do we find a statement regarding the disposition made by the Council of this preparation. (Cf. Jour. A. M. A., January 22, 1921, pp. 259-260.)

The other paper exploits a secret preparation offered to physicians as a specific remedy for narcotic drug addiction. For the most part, this paper is clearly shown to be but poorly camouflaged propaganda of the narcotic practitioners, asserting that addiction is a "definite and demonstrable disease," and proving the assertion by mere reference to "the work and research of Horovitz, Bishop and others."

Apparently the author believes that his assumed title, "Federal physician for the southern district of Ohio," should give convincing weight to his statements and conclusions, as if his work had the sanction of government approval. It appears, however, that the governmental departments at Washington have no knowledge concerning Dr. Frank Burns, or his work, except that he is not employed by the U. S. Public Health Service nor the Bureau of Internal Revenue.

Bishop needs no introduction as the originator of the plausible romance that narcotic addiction is "a disease as definite as pneumonia or typhoid," and the author of endless propaganda asserting the right to supply drug addicts with narcotics, under the pretext of treatment of disease, regardless of the challenge to such practice issued by the Federal authorities in his case by an indictment for violation of the Harrison narcotic law.

The oft repeated assertion that addiction is a disease of definite entity, is wholly unsupported by any evidence of scientific value. It is, however, the familiar contention of those who find it profitable to exploit the victims of drug addiction, by prescribing or dispensing narcotic drugs to them over prolonged periods or quite indefinitely, while pretending to cloak their practices under the guise of medical practice. This has been known as the ambulatory treatment by reduction of the dose, or the gradual withdrawal method. It has been emphatically condemned by the American Medical Association, by the New York State and County Medical Societies. It is definite violation of law in several of the States, and the Federal law and court decisions rendered clearly contemplate the prohibition of such practice. Several physicians have been convicted under its provisions, and others are now being prosecuted for such violations; still others are awaiting trial under indictment. The proposed narcotic law now before the New York State Legislature, known as the Fearon-Smith bill, also definitely prohibits the ambulatory treatment of addicts.

On the contrary, the facts relating to the nature of drug addiction are fairly established, viz., that it is a functional disorder produced initially by the narcotic poisoning; that subjects of addiction present no peculiar pathological lesions of disease; that the habit or craving does not require that it be satisfied, but can be broken by withdrawal of the drug of addiction in any one of several ways, regardless of the age of its victim, without danger, and without undue suffering; that when the narcotic poison has been thoroughly eliminated the addict's physical and mental condition rapidly improves toward the normal; that acquired tolerance to considerable quantities of narcotic drug is early lost, when the drug has been completely withdrawn, so that profound narcotic poisoning results from the taking of much less than the formerly accustomed dose, and has proved fatal in many such cases; and, finally, that no antibodies are formed in the blood of morphine addicts capable of conferring any degree of immunity to the toxic action of the drug.

ALFRED C. PRENTICE, M. D.

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, JUNE 1, 1921.

Collectanea.

Studying Health of Working Children.—Owen R. Lovejoy, general secretary of the National Child Labor Committee, announces in the forthcoming issue of the *American Child* the beginning of a novel and extensive study of the health of working children. This study is being made in the continuation schools of Newark, New Jersey, with the cooperation of the Department of Medical School Inspection. Twelve hundred boys and girls employed in the various industries of the city and attending the continuation schools several hours a week will be examined by a corps of doctors and nurses under the direction of Dr. H. H. Mitchell, health specialist of the National Committee. Their physical condition will be compared with what it was when they received their working papers. A correlation will be made between the occupations in which the children engage and their health records while at work.

The object of the study, according to Dr. Mitchell, is to obtain reliable scientific data on which to base conclusions regarding the need of some form of health protection and service for boys and girls who have left the regular schools and gone to work, as well as to throw additional light on the question of whether the minimum age for entering industrial employment should be raised from fourteen, which is the age established by law in most of the states, to sixteen, which was recommended by the Children's Bureau Conference on Child Welfare Standards in 1919. "The vast majority of juvenile workers in industry," says Dr. Mitchell, "are between fourteen and sixteen years of age. This, generally speaking, is the period of early adolescence, a critical period from both the physiological and the psychological viewpoints. Only seventeen states now require the physical examination of applicants for working papers, and no state sees that children are periodically examined after they go to work to learn what effect their employment is having on their health or to afford opportunity for the correction of defects or dangerous tendencies. Yet no class of adult workers is so dependent on health as that comprising the wage earners who ill advisedly or through economic necessity enter employment at an early age."

Saving Babies in Europe.—A marked tendency to aid child welfare work by state funds is shown in a report on Infant Welfare Work in Europe, issued by the U. S. Department of Labor through its Children's Bureau. This report gives an account of work in Great Britain, Austria, Belgium, France, Germany and Italy.

In all these countries legislation designed to reduce infant mortality has been in force for a number of years, forbidding the industrial employment of mothers before and after childbirth. All important European countries have also made provision for maternity insurance. But experience shows that this is not sufficient, and more direct and special measures to save the lives of babies have received government encouragement and aid chiefly during the past decade. Appropriations are being made for the support and extension of baby health centres and home visiting, notably in Great Britain, France, Belgium, and Germany. Since 1914 England has been making grants of fifty per cent. of approved expenditure on infant welfare work done by either voluntary agencies or municipal or county authorities. The scope of these grants has been enlarged year by year until practically every aspect of infant and maternity welfare is now covered. In France subsidies up to twenty per cent. of approved outlay are given to infant welfare organizations by the government. In 1919 Belgium passed a bill providing for government appropriations to cover half the cost of health centre and other infant welfare activities. In 1918-19 Great Britain spent 258,500 pounds of government funds on infant welfare, and in 1918 France appropriated 650,000 francs for infant welfare work in addition to three million francs for nursing premiums and maternity benefits. State aid has resulted, according to the report, in a rapid expansion of work in behalf of mothers and babies. It has succeeded in bringing about also coordination of all agencies in this field and in exacting higher standards of work.

Surgical Operations on Aged Subjects.—The average age of the patients operated on by Robert M. Culler (*Journal A. M. A.*, April 2, 1921), suggests that senility may not be a bar to surgical procedure as often as is commonly supposed, and that certain physical defects in old age are remedial without the high mortality rate anticipated by many. His experience with these old men inclines him to the belief that aged people are often passed by who may be salvaged without more than ordinary surgical risk, and that disaster in such cases is often borne out of delay and compromise. Careful preoperative scrutiny, speed in the operating room, and painstaking aftertreatment will reduce risks which are derived from cardiorenal defects and other concomitants of age. The ages of these patients varied from forty-seven to eighty-one; the average was sixty-seven and six-tenth years.

New York Medical Journal

INCORPORATING THE

Philadelphia Medical Journal and the Medical News

A Semimonthly Review of Medicine and Surgery, Established 1843.

VOL. CXIII, No. 16. NEW YORK, WEDNESDAY, JUNE 15, 1921. WHOLE No. 2211.

Röntgen Therapy in Superficial Malignancy

A Report of One Hundred Consecutive Cases of Superficial Malignancy Successfully Treated with the X Rays with the Absorption Method of Dose Estimation

By WILLIAM H. MEYER, M. D.,
New York,
Director, X Ray Department, New York Post-Graduate Medical School and Hospital.

FOREWORD.

That radiant energy can and has caused retrogression and apparent disappearance of malignancy is not new. Medical literature has repeatedly brought this fact to the attention of the medical profession. But that we have in the x rays a positive, quick, painless, cosmetically good, yet reasonably inexpensive, method for the relief of early superficial malignancy is not as generally appreciated as it should be.

In many circles there is a strong feeling against the use of x rays, and I unhesitatingly ascribe this to two facts: first, that röntgen therapy is not simply pushing a switch and measuring doses by millimetre and time clock; and, second, that many lay technicians and even some socalled röntgenologists have, through their inexperience, been responsible for untoward, not to speak of unsatisfactory, results.

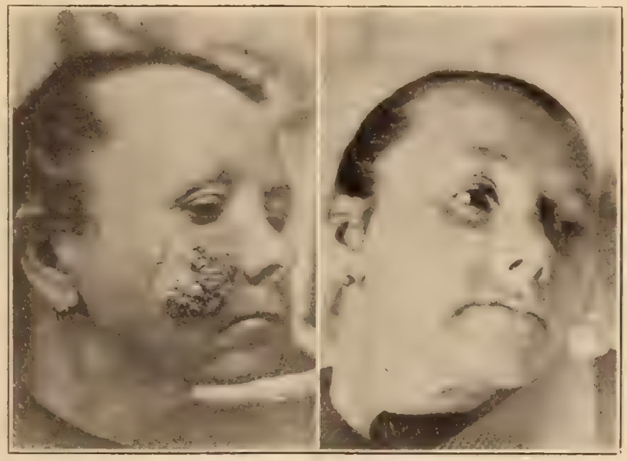


FIG. 1.—Miss A. B., aged thirty-seven, diagnosis epithelioma of the right cheek. Date of first treatment, June 6, 1918. Second photograph after two months and present condition good.

My answer to the first of these points is that röntgen therapy is not a sideline to be easily encompassed and employed by every practitioner. The proper handling of the x rays requires no mean knowledge of electrophysics which may be picked up in a few days. Years of accumulated experience cannot be gained or assimilated in a few weeks. Manufacturers, anxious to sell, would have you believe otherwise, but they are after dollars, not the welfare of the public. As regards the second point—rank laws are those that permit anyone without license to examine and treat with an agent so capable of good and yet so potent of harm as the x rays.

METHOD.

Some fifteen years ago I used the erythema dose in treating epithelioma. This dose invariably required repetition, not once but several times, before satisfactory retrogression of the lesion was obtainable. This naturally led to the assumption that the erythema dose was hardly sufficient to cause pronounced retrogression in superficial malignancy.

With the double pastille dose as employed by McKee and others, a more prompt reaction is obtainable. However, even here a second or third application is frequently necessary, and even then a recurrence at the old site or margin has occurred. Therefore, even this dose can hardly be assumed as sufficient for complete eradication of malignant tissue.

With such a dose a strong inhibitive action can be brought about, yet recovery of cellular activity must be remembered, and, therefore, recurrence is probable. That malignant cells may lie dormant only to light up with renewed activity a year or more following radiation has all too frequently been the case. Therefore, another method of treatment and dose estimation has here been evolved. A description of this appeared in a previous article (1). From this article the following quotations may be of interest:

1. The assumption that the absorption of one mm. aluminum is practically equal to the absorption in

Copyright, 1921, by A. R. Elliott Publishing Company.

one cm. of water, and this in turn is approximately equal to the absorption in one cm. of human flesh. Thus the absorption in one mm. aluminum is roughly equivalent to the absorption in one cm. of human flesh. (Perthes.)

2. With unfiltered rays and a medium, tube, a pastille dose delivered to the skin will result in an erythema and temporary epilation, as well as checking the function of the sebaceous and sweat glands.

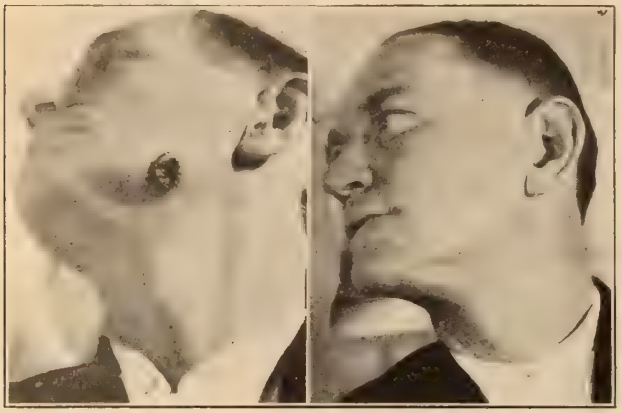


FIG. 2.—Mr. H. McC., aged forty-eight, squamous epithelioma of the left jaw. Date of first treatment, February 2, 1918. Second photograph after two months and present condition good.

3. The pastille dose achieved with a medium tube and unfiltered rays shows a half absorption of fifty per cent. in one cm. of water (Christen). This in turn is roughly equal to the same absorption in one mm. aluminum.

4. An erythema will result, irrespective of penetration or infiltration, provided the total cumulative absorption exceeds fifty per cent. in the first cm. of flesh as measured in one mm. of aluminum.

5. Since, irrespective of penetration or filtration, a cumulative time absorption of over fifty per cent. in one cm. of human flesh produces an inhibitory action on cells of special function, then it is reasonable to assume that, irrespective of depths, the metabolic process of radiosensitive structures should be subject to inhibition when the total cumulative time absorption per cent. per cm. exceeds fifty.

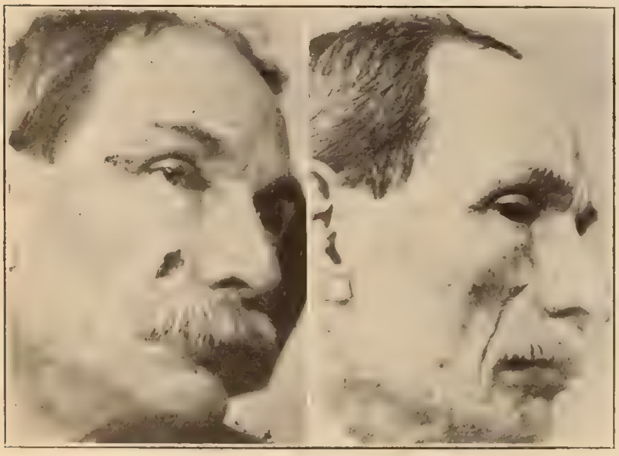


FIG. 3.—Mr. J. C., aged sixty-two, epithelioma of the right cheek involving deeper structures down to periosteum. Date of first treatment February 12, 1918. Second photograph after two months.

6. a. Experience has shown that less than a pastille dose with unfiltered rays to the skin is stimulative in action. (For mild stimulation, I employ one fourth to one third pastille dose, and for very strong stimulation from one half to two thirds pastille dose. These represent respectively a tota cumulative absorption of fifteen to twenty, and twenty-five to thirty-five per cent. per cm. depth of tissue.)

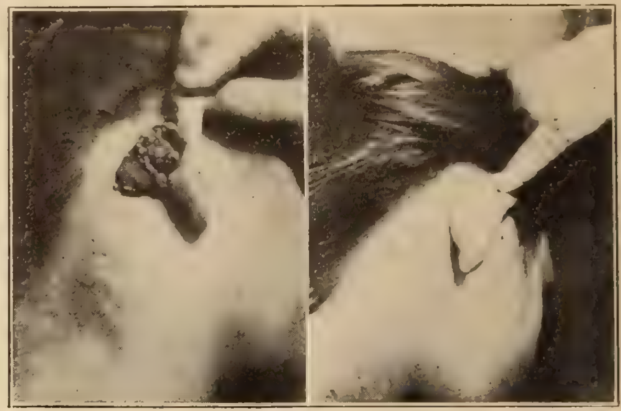


FIG. 4.—Miss H. W., aged seventeen, epithelioma (warty) of the right ear. Date of first treatment, November 15, 1918. Second photograph after two months and present condition good.

b. The pastille dose with unfiltered rays (representing approximately fifty per cent. total cumulative absorption in the first cm.) is the erythema dose and generally recognized as of passing inhibitive action to cells of special function.

c. A double pastille dose with unfiltered rays has been found necessary to produce a more profound inhibitive action with retrogression; this in turn equals a total cumulative absorption of about one hundred.

d. Complete destruction with necrosis will occur with from 200 to 250 per cent. total cumulative absorption.

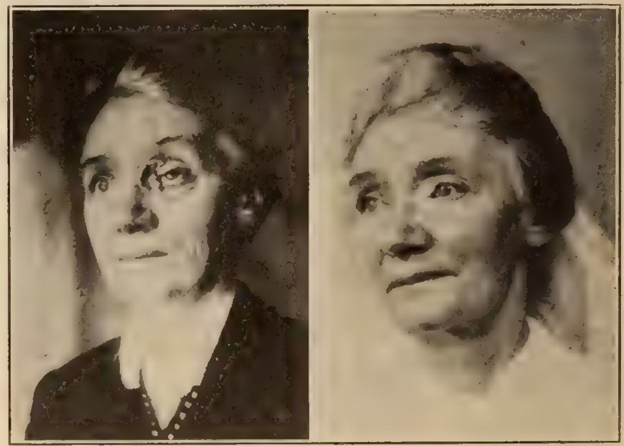


FIG. 5.—Miss H. T., epithelioma of the left inner canthus (basal?). Date of first treatment, March 31, 1917. Second photographs after two months and present condition good. The difficulty in handling such cases as this is in the protection of the eye. This was accomplished by covering the eye with a glass shell and building protection over the same. Perhaps due to overcaution, recurrent nodules at the edge of the original growth required further treatment. The result of these treatments were as good as the first with the condition to date as in the second photograph.

The lethal dose in malignancy has been variously estimated at from one and a half to four skin doses. I believe that the total destruction of malignant tissue should be the aim, not allowing some cell elements to remain to light up at a future date. The latter has all too frequently been the case where momentary brilliant results have been obtained.

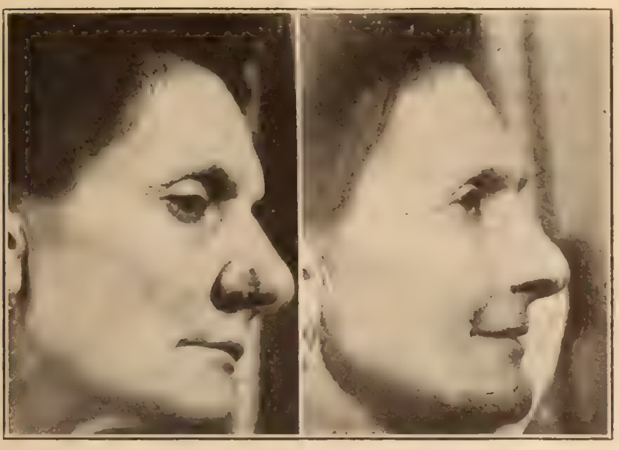


Fig. 6.—Mrs. J. S., aged forty-nine, epithelioma of the right nostril. Date of first treatment, January 27, 1917. Second photograph after two months and present condition good.

To summarize röntgen dosage in relation to the total cumulative time absorption per cm. depth:

			Inhibitive		
	Stimulative		*Moderate*	*Prolonged*	*Destructive*
Action	*Mild*	*Strong*			*Total*
Total cum. absorption per cent. per cm. depth..	10 to 20	25 to 35	50 to 60	100 to 120	200 to 250
Biological effect...	Increased Metabolism		Anabolic		Catabolic
Period	Repetition of dosage necessary for continuation of effect. Full recovery to normal activity in from one to three months.		Possible recovery in from one to three years.		Ulceration and necrosis. Slow to heal with scar tissue formation.

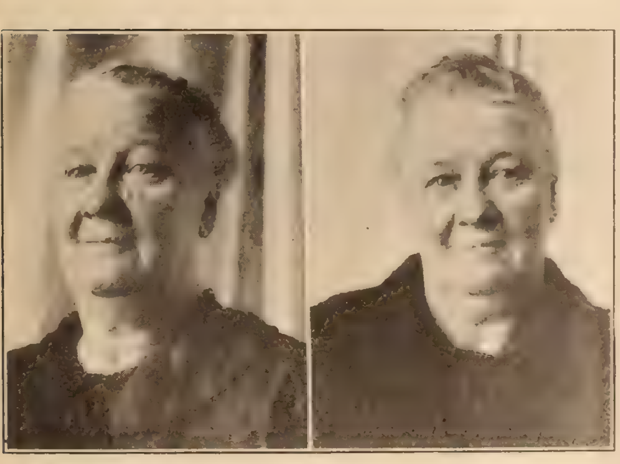


Fig. 7.—Mrs. M. H., aged sixty-one, epithelioma of the left cheek. Date of first treatment, October 3, 1917. Second photograph after two months and present condition good.

Since under varying degrees of penetration and filtration, and for deep therapy, the present day radiometers do not indicate the various reactions, and since the total cumulative absorption per cm. depth does, then this is the logical method of dosimetry.

Thus, whether the lesion be superficial or deep, the factors to be determined are: First, whether stimulation, inhibition or destruction is indicated; second, what quantity and penetration, filtration, distance and time, and, in deep cases, what number of areas for crossfire are necessary to bring about the desired total cumulative absorption at the site of the lesion; third, protection of normal tissues as far as possible, with special attention in deep cases to normal skin tolerance. Every means at our disposal should be employed to arrive at a correct diagnosis with a definite notion as to the location and extent of the lesion. It must also be remembered that along the path of a single beam of x rays various reactions may occur. Thus we may have destruction with necrosis at the skin surface; immediately beneath this a strong inhibitive reaction may occur, while but a little deeper we will have a stimulative action diminishing as the depth increases.

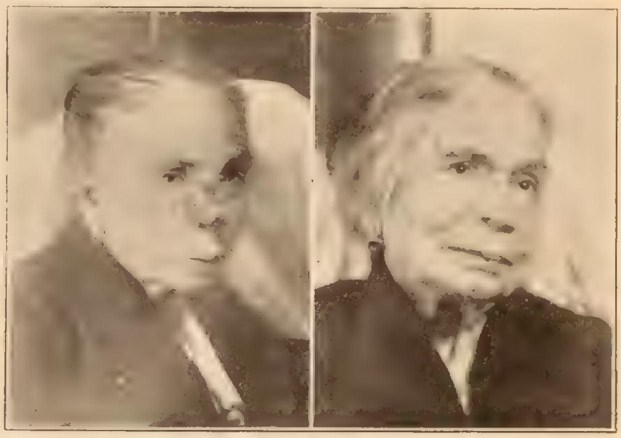


Fig. 8.—Mrs. F. C., aged seventy-two, epithelioma of the right nares (A more recent case). Date of first treatment, September 24, 1920. Recent photograph, November 20, 1920. Present condition good.

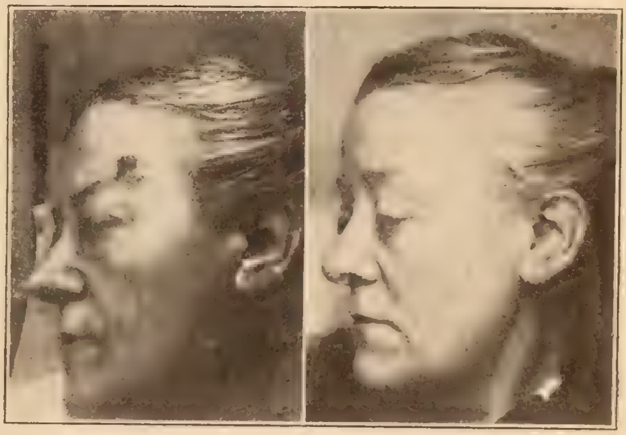


Fig. 9.—Mrs. C. K., aged fifty-five, epithelioma of the left temple. A recent case illustrating the result obtainable two months after a single dose. The resulting scar is soft and pliable, pinkish white, and smooth, unnoticeable at ordinary distance.

Again, at the same plane, all three reactions may occur, depending upon the radiosensibility of the structures involved.

It remains, then, to determine with what penetration and filtration and with how many areas the desired total cumulative absorption can be brought to bear. As far as superficial conditions are concerned, the unfiltered or weakly filtered ray is indicated, i. e., the more superficial the disease the softer the ray quality. (It is not meant hereby that similar superficial reactions with filtration cannot be attained. As a matter of fact, I have already stated that, given the same total cumulative absorption per given depth, practically the same results would obtain. On the other hand, for deeper seated lesions, greater penetration and filtration are essential to success, and I consider every lesion extending beyond the first half cm. as deep.) I always employ, however, one sixteenth inch of pressed fibre as a protection from heat, light, corpuscular and the extremely soft rays.

Success with röntgen therapy in treating superficial malignancy, I believe, can be invariably attained by:

1. Dose estimation by absorption.

2. Destruction of the original seat of invasion, including a narrow area of supposed healthy tissue. (This dose to be administered at once or at least within two weeks from the first application.) The reasons for this are, first, that it is a recognized fact that tissue of any kind rarely responds as well to the second or third application as with the first, and, second, it appears more than hazardous to experiment with divided doses, since these may be stimulative in action. The inhibitive dose (the socalled lethal dose?) has often been followed by apparent brilliant results; recurrence, however, has been all too frequent.

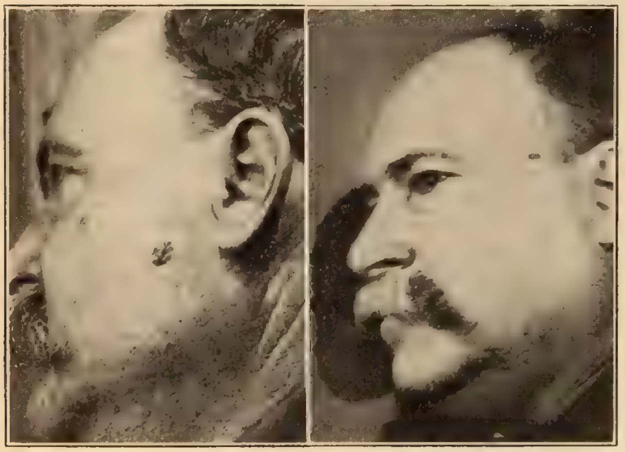


FIG. 10.—Mr. G. C., aged fifty-five, epithelioma of the left cheek. Date of first treatment, February 17, 1917. Second photograph after two months and present condition good.

3. A strong inhibitive dose, preferably by the crossfire method, should be applied a considerable distance beyond the original lesion, not alone laterally but in the depth, that no stray cells or extension of the malignant invasion be overlooked, or possibly stimulated.

4. Possible metastasis along the lymphatic routes to receive similar inhibitive dosage by crossfire.

I will not lengthen the article by inserting an itemized list of over one hundred consecutive cases, for this turns out to be but a repetition of the name and age of the patient, the referring physician, the diagnosis (epithelioma, rodent ulcer, and other details), the date of treatment as outlined above, the result and further prophylactic applications. These are in the records of the x ray department of the Post-Graduate Hospital.

A summary of these cases shows in each instance complete retrogression in from one to two months following treatment, with but a single recurrence which has also yielded to a second application. One of the cases illustrated dates back over ten years. Ninety-nine per cent. of all cases treated have been without recurrence. Eighty per cent. of the cases have been without recurrence for a period of three years or more. None included in the list have been treated within the year.

A few photographs are herewith submitted simply to illustrate the type and location of lesions in the series and the results obtained.

It is not new that such cases have been successfully treated by the röntgen rays and other methods heretofore. The facts, however, to which I wish to call attention here, are that, with röntgen dose estimated by absorption, a uniformly satisfactory and permanently good result is obtainable in a large and consecutive series of cases.

CONCLUSION.

Every case of malignancy was once in the precancerous stage. If its insidious and dangerous character had then been recognized, its extirpation would in all probability have been a simple matter. The trouble, however, is that all too often the patients and frequently the physicians themselves will suppress the unconscious suggestion of possible malignancy.

The result of this delay need not be dwelt upon here. Each of us has seen the hopelessly widespread, deepseated, incurable lesions as a result of this procrastination. Many lay people, and professional men, too, will conceal their suspicion—some perhaps from fear of the knife—with others a peculiar psychology appears at work, in which a concealment worse than with venereal disease is practised.

It is high time that the fact be recognized that every sore that refuses to heal, every mole that becomes irritated, every local skin irritation that persists beyond a reasonable time, may be the incipient stage of an epithelioma. And, if these do not promptly yield to palliative treatment, it is undoubtedly wise to proceed under the supposition that the condition is precancerous, if not in fact already malignant.

Right here I propose to take a step which may bring forth criticism and weaken my evidence, yet I feel is justifiable. That is, that in view of the frequent uncertainty attached to pathological reports through unsatisfactory scrapings and too small sections, there is grave danger of dissemination and metastasis, to say nothing of the irritation by such procedure. Therefore, now as heretofore, I am quite willing to have it said that some of the cases that I have treated, some of which are reported here, have not been proven malignant.

If there be a means of removing this condition painlessly, without the knife and with good cosmetic results, then why await developments or sufficient growth for scrapings and sections by which time it may have reached more vital structures and incontrollable depth, with probable glandular involvement?

As a matter of fact, our most difficult cases have been those in which curettage and sections have been made, and again in the recurrent type following the use of caustic paste, freezing or operation.

The conclusion must be that we have, with properly controlled röntgen dosage, the most satisfactory means for the relief of early superficial malignancy.

REFERENCES.

1. MEYER: Röntgen Dose Estimation, NEW YORK MEDICAL JOURNAL, December 11, 1920. (Since some of the cuts in the original article were misnumbered, a corrected reprint will be furnished if a stamped return envelope be addressed to William H. Meyer, M. D., Post-Graduate Hospital, Twentieth Street and Second Avenue, New York City.)

POST-GRADUATE HOSPITAL.

The Reciprocal Influence of Influenza and Epilepsy*

By ALFRED GORDON, M. D.,
Philadelphia.

It is not uncommon to observe that when in the course of one morbid state another affection develops, the first is either improved or kept in abeyance. In paresis, for example, if a new infectious and febrile process of any origin supervenes, considerable amelioration of paretic manifestations may occur. A fixation abscess artificially induced may improve an infectious process in the course of its development. In encephalitis lethargica Netter obtained considerable improvement and, in some cases, a favorable termination from an artificial abscess produced by subcutaneous injections of turpentine.

In studying epilepsy in all its phases and during its entire course, viz., for a number of years, one is struck by the fact that an infectious process of any origin occurring in an epileptic has a decidedly favorable influence upon the frequency and severity of epileptic seizures. In some cases the latter are totally interrupted during the febrile period of the infectious disease. On the other hand, some investigators observed that not only ordinary acute diseases but infectious or toxic affections with especially elective action on the nervous system may exercise a favorable influence on the course of epilepsy. The special treatment instituted in such cases for the toxic process has at the same time a beneficial effect upon the convulsions. Lesieur and Milhaud (1) report a case of tetanus in an epileptic. Intraspinal injection of antitetanic serum not only removed the tetanic manifestations but also the epileptic seizures for a period of several months. Similar results have been obtained by Guiraud (2). The same observation was made on the effect of rabic virus and antirabic serum. Giovanni (3) reports such a case. Nikitine frankly treated a case of epilepsy with antirabic serum with very good results. It seems, therefore, that the reactions of defense against toxins which have an elective action on the nervous system have a favorable influence on epilepsy.

In view of all these facts a question naturally arises: What is the intimate mechanism of the favorable influence of various toxins on epilepsy? One is logically led to the view that the toxins of rabies, tetanus or of other infectious processes act as antigens and produce in the organism antibodies which neutralize the toxins of epilepsy. That an epileptic person possesses a certain toxicity in his humors and tissues can be seen from the fact that his blood serum is very toxic for animals when injected into their brain. With Abderhalden's reaction the existence of ferments antagonistic to albumin was demonstrated by Biswanger and Léri and Vurpas. Papazolu (4) has shown in the serum of epileptics a ferment which is injurious to the nerve cells. The existence of a toxin is admitted, but the sources of its origin are not definitely established: it may originate in the ductless glands or in the disturbed metabolism of the albuminoids; it may be the product of a morbid activity of the leucocytes (Ceni). It seems evident that autointoxication is an essential pathogenic factor. In diseases, the toxins of which have a special affinity for the nervous system, there may be another possibility besides neutralization of epileptic toxins. Manouélian (5) found special corpuscles in the protoplasma of cortical cells and in their prolongations in cases of tetanus. Following the injections of antitetanic serum, the cells undergo a modification in their chemical function and lose their so-called "convulsive aptitude or predisposition," which may be an acquired or a hereditary property.

The cellular condition or the neurotoxemia or both simultaneously may be considered as pathogenic factors in essential epilepsy; autointoxication may be the essential factor in one group of cases; a perverted functioning of the nerve cell in another group; an association of both may play an important rôle in a third group of cases.

The relation of infectious processes to the course of epilepsy has been studied by me in a series of twenty-five cases of influenza. First of all, a complete suppression of convulsive attacks was observed in the acute period of the disease in each of the cases. It is particularly remarkable that the cessation of the epileptic seizures coincided with the elevation of the temperature curve, at the time when the infectious process made its appearance. As long as the temperature remained much above normal there were no seizures. As soon as the febrile state commenced to subside, there was a tendency to a return of the convulsions. Here one finds considerable variations. When the temperature was 102.3° F. there were no convulsions in any of the cases. In twelve cases, at a temperature of 100.5° F., the convulsions commenced to return, but irregularly; in some only an occasional mild epileptic attack was observed; in others, none at first, but in two or three days they made their appearance, and again in a mild state as long as the temperature remained above 99° F. When the temperature became normal, all twelve patients commenced to have their former attacks identical in severity but less in frequency during the following many weeks.

---

*Read before the Philadelphia County Medical Society, April 13, 1921.

The remaining thirteen cases presented this peculiarity: that there was no recurrence of epileptic seizures as long as the temperature remained above normal. When the latter was reached the convulsions commenced to reappear, but, as in the preceding subgroup, for a long time they occurred only occasionally. Eventually, however, the epilepsy assumed its former aspect precisely as before the onset of the grippal infection.

To sum up, in twenty-five epileptics the inhibiting influence of an infectious disease was in full evidence as long as the toxic processes were at work, and even for a long period of time after their disappearance, although with unequal reaction in all the cases. This observation is highly suggestive for therapeutic attempts in the direction of a serological relationship to epilepsy.

In the cases just described it is of interest to observe that complete recovery followed in each case as far as the superadded grippal infection is concerned, and at no time was there any complication in the course of the influenza.

In another series of seventeen cases of grippe in epileptics the situation was different. First of all, the improvement in the epileptic seizures was largely similar to that of the first series. We find here also total absence of epileptic attacks during the elevation of temperature. We also find a tendency to recurrences when the fever commences to subside. On the other hand, the infectious process ran here an unusually severe course, and eleven of the patients had serious complications; five of the eleven patients died. In spite of the gravity of the grippal infection, the epileptic seizures were totally absent during the grave phase of the disease. As to the influenza itself, six cases ran a high temperature, from 102° F. to 103.4° F., which persisted for a number of days. The patient's general condition was considered very serious, as there was a pronounced inhibition of many vegetative functions. In the remaining eleven patients serious complications developed, viz., pneumonia, bronchopneumonia, pulmonary edema, laryngitis, and persistent profuse diarrhea. Death occurred in all the five patients from pulmonary complications.

A question naturally arises: What was the cause of the associated pathological manifestations in the course of the original grippal infections? Was the epilepsy directly or indirectly an important factor in intensifying the grippal infection in one group of cases and in producing serious complications in other cases? Was the epilepsy the cause of the high mortality in our series? A close analysis of various functions of epileptic individuals, especially of those in whom the seizures occur frequently and are of the major type (grand mal), reveals high arterial tension with congestive phenomena such as flushed face and other manifestations. Postmortem records show infiltration and congestion of various organs and tissues, including the central nervous system. Epileptics possess a special predisposition for congestive states. It is therefore evident that infectious processes occurring in individuals whose special somatic characteristic is a tendency to congestive states are likely to have congestive complications develop in organs and tissues which are primarily affected by the original infectious elements. Epileptic persons therefore possess a special vulnerability in this particular respect, and in the series of cases under consideration the epilepsy or rather the epileptic makeup played a considerable contributing rôle in the causation of the special gravity of the influenzal infection. These views find their corroboration also in an extensive study made by Maillard and Brune (6), who express a similar opinion with regard to the influence of epilepsy on pathological processes of infections. However logical and plausible such a conclusion may appear, one must also take into consideration this important fact that epileptics as a rule are kept on a restricted alimentation which naturally leads to a decrease in weight. Besides, the restrictions imposed upon them with regard to various activities and to physical exercises are all conducive to a lowering of the bodily tonus which, physiologically speaking, means a diminution of resistance power of the organism at the time when an invasion of an infectious element takes place.

Epilepsy consequently carries its effect directly and indirectly, and in a certain number of cases plays a very important part in rendering intervening morbid conditions more serious than when the latter attack individuals free from epilepsy.

An analysis of the facts presented in the study of reciprocal influence of influenza and epilepsy leads to some deductions in the domain of therapeutics. If, as we have seen in the first part, a grippal infection has an inhibiting effect on convulsive seizures, it is to be presumed that a toxic principle elaborated during the infectious state is capable of neutralizing the toxic principles existing in the humors of epileptic individuals. Serotherapy is therefore indicated. The problem before us is to produce such a neutralizing biological product.

The second part of the present study leads us to this inference: that any infectious process developing in an epileptic must be regarded as a grave situation in view of the strong possibility of complicating affections of a congestive character, which may end fatally and consequently serious steps should be taken during the earliest phase of the infectious process.

REFERENCES.

1. LESIEUR and MILHAUD: *Soc. med. de hôp. de Lyon*, November 11, 1913.
2. GUIRAUD: *Paris Médicale*, October 5, 1918.
3. GIOVANNI: *Gaz. degli Osped*, 1893.
4. PAPAZOLU: *Compt. Rend. Soc. de Biol.*, 1913.
5. MANOUÉLIAN: *Am. Institut Pasteur*, September, 1915.
6. MAILLARD and BRUNE: *Presse Méd.*, No. 8, 1921, p. 70.

1812 SPRUCE STREET.

The Sociological Training of Epileptics

By L. PIERCE CLARK, M.D.,
New York.

There is at present a scientific need for suitable places to study epileptics, both for exact observation of the peculiar physical incitors when present and the psychic ones which lead to attacks. Inasmuch as the fundamental makeup is the necessary foundation to the essential disease and is the enduring state in an essential epileptic, it is not possible for the trained observer to gain a proper evaluation of such a character in surroundings that do not lend a normal setting in which the individual may display his innate temperamental defects. A general hospital may furnish all the desired requirements for physical observation, but the mental habits, conduct disorders and other life reactions are possible only when a natural atmosphere is provided. Large public hospitals and sanatoria hardly contribute such precise and detailed observations as are now found necessary for exact diagnosis. Hence the need of small observation clubs and homes for study and treatment of obscure cases. Obviously, the extra solicitous attitude present in the patient's own home makes the latter environment impossible for trained observation, no matter how well equipped it may be for the individual's activities and interests. We must therefore look to a combination of close trained observation of the general and mental hospital, plus a home environment for epileptics to furnish us the data on the real nature of this obscure periodic disorder as well as its character foundations in perverted and undeveloped instincts.[1]

Epileptics interned in State hospitals for the insane, where they had been placed because of transient psychotic episodes, were disturbers of an otherwise tranquil environment, not because of their periodic seizures but on account of their general inaptitudes for socialization. Their personalities forbade this. Their peculiar makeup has been so thoroughly detailed elsewhere we will not dwell upon it here (1). Suffice it to say that in many instances, while making separate provision for epileptics, their temperamental faults have been so glaring that the free association of community life in some states was restricted to that of large buildings where better personal discipline could be maintained. Sooner or later the officers learned that reverting to this old institutional type only made matters worse. For the sake of harmony and peace they soon were driven to providing small isolated cottages, a plan now rather definitely recognized to be best for this class.

Through my own experience at the Craig Colony for Epileptics the advantage of the greatest possible segregation for epileptics was obvious to me. Consequently, when observation and treatment of private patients of this class were undertaken I arranged to have each patient provided with his separate nurse trainer and a normal tranquil existence for his surroundings. Under such circumstances a fine social packing of normal contacts could be more or less evenly maintained, but the patient failed to gain any cooperative control of his egoistic tendencies; though the life itself was ideal it seemed to encourage the main trends of the epileptic's disease. Besides, the normal residents with whom the patient came in contact little comprehended or cooperated with the main purpose of the plan, and they either shunned the patient or overindulged his eccentricities to the patient's great detriment. It is a nice question just how closely in contact with each other epileptics may dwell without harm. We have not yet worked out the ideal plan, but have in the past few years learned some interesting sociological facts that may be of general interest.

Our chief aims in the formation of group treatment of the epileptic in private practice were: 1, to establish such an environment that one might gain a fair knowledge of the life reaction faults each patient possessed; 2, an opportunity to note and direct proper reeducation of habits, and, 3, to prepare the more favorable cases to reenter the outside world and their home environment.

Our first effort in this sociological study of the epileptic was undertaken eight years ago on the edge of a little New England town. The group consisted of all men patients, each having an individual nurse trainer or attendant. The housekeeping part of the club management was in the hands of a willing but not especially competent woman. Thus the unity between a proper home atmosphere and the actual training force was not complete; nor was the training personnel sufficiently unified to make consistent general training possible. However, the usual lines in private practice of daily routine, training and observation were in force. The actual work engaged in by the patients was confined to gardening, woodcutting, and handicrafts. Later in the summer the patients made a more extended contact with the townsfolk by engaging in gathering fruit. While this contact widened their interests, it lacked in social rapport. The club being distant two miles from the town, the patients had little opportunity to engage in small village interests and activities. Thrown thus upon their own resources, the internal activity of the club group had to be expanded, but with the imperfections in the home and training force already alluded to, there were serious drawbacks. However, it was a good experiment in roughing it by a type of patient least inclined to generate an interest in even small group settings. The very impermanency of the summer camp, as it were, made for disinclination to adapt to its environment, particularly on the part of those patients who were more rigid in mentation and habits (epileptic deterioration). Many shrewdly calculated that the summer would soon pass, and what would be the use of making great efforts for so short a period? Plenty of detailed observations were possible. The relative fixity of good and bad habits could thus be gauged with but little opportunity to dislocate the character faults. The main thing this arrangement lacked was more rapport between a unified home influence and nurse training, plus the necessity of more varied ages of patients as in ordinary community life and both sexes being represented.

---

[1] My best thanks are due to Mr. T. E. Uniker, whose assistance has been invaluable in putting this plan into execution.

The next step was to move the club group nearer to New York in the fall and eliminate the faults in the social grouping. The mixed group we thus formed made for a better social rapport all round, and we had several normal individuals live in the same house with the patients. Thus more normal interests and ideas were possible. Impromptu lecture courses were provided, and many new occupational interests were added, in the form of woodcarving, basketry, brass and leather work. A continued change and fresh appeal is very necessary to stimulate the rigid mental habits of the epileptic. Still the lack of a free and easy home atmosphere hindered much, and discontent regarding household management was often present. Inasmuch as a semimilitary, dietetic and physical therapy was then still quite the dominant note in the treatment of the epileptic, many patients accepted the stiffness of the club settings as really a necessary part of his treatment. Not a few lessened their conflicts by long walks and occupation in the workshops.

The next summer the New England village plan was again instituted, but with a different home management, under the nurse trainers themselves. Two cottages, one for women and one for men, separated a little distance from each other, were secured. One dining service for all was provided. A point of greatest importance in the social treatment of the epileptic, as one might rightly infer, is the necessity of mixed groups of both sexes and the incorporation of their ideas, which latter proved conclusively to be the greatest incentive to spontaneous activity, occupational and social, that we had hitherto learned. A return of the club group to the suburbs for the winter held no new features aside from an experience of occupational outlets that withdrew much of the patients' concern from the still too rigid and demanding home management.

The next summer, the third, the same country town as before was requisitioned for the club, but this time an abandoned hotel on the main street was taken over. Inasmuch as many patients had in the past shown considerable disinclination to follow consistent work merely for the work's sake, a system of remuneration and prize rewards was instituted. This plan was especially applied to extensive garden work. A great deal of directed training then had to be taken on by the nursing staff. Many interesting observations in this field were made; but a rather glutted local market for garden products dampened much of the unspontaneous activity of the patients in agriculture. Even the house management failed to cooperate especially well in its buying of products, and engendered much petty annoyance and childlike behavior on the part of the more youthful epileptics. However, the compensation and reward principle is not a bad one, and many people, sick or well, will keep continuously employed for no other motive; in this respect the epileptic is no exception. In many public colonies personal comfort and gratification of individual tastes are necessary to gain any good systematic work. It may be an ignoble practice to bribe a patient to do that which is necessary or best for him, but if other incentives fail, what then? Judiciously employed, I believe it has its place in promoting the best interests of the epileptic, under both public and private care.

We soon discovered that having patients in the heart of the village life was very bad indeed. Perhaps if time, patience and extraordinary tact were employed, this principle would be no more harmful for epileptics in this country than it is in Europe, as followed out at Bielfeldt, or in the colonization of the insane at Ghiel in the Scottish boarding out system. But the epileptic is not as amenable to gregarious and family life as the chronic dement; his very temperament is opposed to this specie of social treatment unless there at least be discriminating guidance and supervision. The inadaptability of the epileptic on the one hand is shown in his attitude that the average villager is selfish, snobbish and narrow in human interest; while, on the other, the latter looks upon the epileptic as a peculiar specimen of humanity, to be exploited for his eccentricities and general attitudes and behavior.

The next summer it was decided to see if a seaside residence afforded any new settings of sociological value. All the former features of interests, occupations and grouping were retained. It was found that other guests vacationing at this resort were more casual and less demanding than the set environment of a country town. The separate personnel of home management was finally discarded entirely, and the club was placed under one head. It was a decided improvement. Of course the social and amusement side of the club activity was a great success, but consistent work and teaching were much slowed. The sea bathing was beneficial and stimulated interest in water sports. The patients were under proper espionage, and no accidents occurred.

The following summer an agricultural college town was tried, especially to see if more epileptics taught and trained by skilled teachers in this field might not encourage many of this class to take up such as a life occupation. All the patients took up one or more of the summer courses. The kind and character of work they accomplished did credit to all. Normal associations in the community itself were better here than in previous country environments. Many of the patients joined in the town activities, attended dances and entertainments. Most epileptics possess but a third of the normal individual's physical and mental capacity, but the environment did not prove too taxing as the summer schedule was not half as strict as the regular term college work. Under judicious control and sympathetic direction perhaps many epileptics could take summer college work in agriculture, and even many other types of college curriculi.

The next summer it was thought that climatic conditions opposite of the seashore experiment might afford some interesting values in treatment, both social and occupational. To this end the whole group was taken to the Adirondacks, distributed in adjacent cottages, and four schools were inaugurated, consisting of carving classes, Montessori and kindergarten work, esthetic and rhythmic dancing, and English classes. Some psychotic and neurotic patients were included. The use of patients as assistant teachers increased the value of the experiment, and showed that such a plan could be made highly useful to the epileptic. Normal children were also included in the Montessori and kindergarten classes. The details of this experiment have already been published (2).

Our present experiment is worthy of more extended comment, as it embraces all the good points learned from previous settings and the final consolidation of a living club unit. The club was located a short distance from a large town situated on the Sound, in Connecticut. We dispensed with personal attendants for each patient and had instead group nursing and training, under an efficient and capable trainer for the men, and a woman equally capable for the women patients. Both sexes lived in the same household. It consisted of children, youths and adults—the mixed component of an ordinary large family grouping. By having a diffused generalized training for all, the work was more uniform and made for better cohesion of social effort. Thus the club at last possessed the true spirit of a well organized and happy home. Tennis courts, a golf course, and sea bathing excellently supplemented the indoor activities heretofore detailed. A proper cooperation of the servants employed helped not a little. In consequence it was possible for the women patients to engage cheerfully in various household duties under adequate compensation, while the boys had chores to supplement the other more housewifely interests of the girls. Lectures, talks, books and magazines added their human appeals for social gatherings. Some undertook church work, and a few took courses in the small business college the town afforded. Another addition is the formation of a club group for constructive discipline and suggestions in social activities. Thus there is now a fine combination of discreet treatment in its broadest and best sense. Many of the patients' conflicts are taken at their very beginning and used for training treatment.

In conclusion, one may say that the ideal method of training epileptics and allied nervous disorders is by the home club plan, as has been given above in its evolutionary stages. It is not a sanitarium in the ordinary sense; it is not a home in its unyielding personal demands only too often encountered; it is not a school in its inflexible and rigid nonconformity. But it is something of all these, with social advantages adapted to the level of the innate possibilities of the epileptic. Above all, it is sufficiently in contact with the outside world activities to increase the epileptic's hope that he may return all the way so soon as he is able to make the proper adjustments to the ordinary stresses which life demands. To make the whole plan as vital and real as possible while the individual treatment is in progress, is the real aim.

REFERENCES.

1. CLARK: The True Epileptic, *Philadelphia Medical Journal,* May 4, 1918; Is Essential Epilepsy a Life Reaction Disorder? *American Journal of the Medical Sciences,* November, 1919.

2. *Idem:* An Experimental Study in Mental Therapeutics, *Medical Record,* February 21, 1920.

20 WEST FORTY-EIGHTH STREET.

The Nervous Patient from the Viewpoint of the Vegetative Neurologist

By EDWARD HIRAM REEDE, M. D.,
Washington, D. C.,

Lecturer on Vegetative Neurology to Georgetown University Medical School; Attending Neurologist to the Washington Asylum Hospital.

Let me begin by saying that we are not entering the field of polemical medicine. We are thinking of the question of life and health in terms of the individual and the environment. In reaction to the stimuli of environment, the individual shows certain changes which are primarily physiological. And yet if you consider that the mediation of neurones is an economical way of extending the result obtained at first by chemotaxis, and that the record and possibility of repetition subserved by the neurone is a tissue memory, it is possible to think of the process as psychological. And it is also possible that all tissue memory lies in nervous or brain tissues and is essentially psychological.

Anyway, we speak as if we were thinking in terms of physiology while at the same time we admit that the process may be fundamentally psychological. Thinking in these terms of individual-environment, we find that we are considering phenomena of reaction. And that these phenomena occur as visceral changes in feelings, as mental changes in ideas, and as motor adaptations in posture and conduct. In this sense Freudism, Jungism, Adlerism or Janetism become descriptive terms referring to phenomena representing reactions. In this sense, therefore, White, and Jelliffe, and Kempf are more scientific than those mentioned.

In so far as the vegetative neurologist records phenomena which arise out of the reaction of individuals to environment, whether they occur as affects, ideas or actions, but fundamentally energized by the adjustment of the vegetative apparatus which is the primary reaction mechanism, he feels that he is not entering into argument regarding any descriptive terminology that may be applied to these phenomena by others who view the same things from a different angle.

The reaction of the individual to environment is a fact, whether we think of it in terms of repressed affect or conditioned behavior. The analyses of visceral pantomimes, of repressed complexes, of conditioned behaviors are all but ways of getting at a fundamental truth, which always remains the same, for otherwise it ceases to be scientific truth.

The attitude of the vegetative neurologist is of interest in reference to the ordinary nervous patient, without regard to whether the physician regards his case as simple nervousness, neurasthenia, neurosis or psychoneurosis, because he sees the patient primarily reacting through his vegetative nerves to environmental stimuli. And this reaction is transcribed in a visceral pantomime which truthfully reveals an attempt to adjust. He is working at the lower plane of adjustment. Compensatory attempts rear faulty structures of ideation and conduct to be sure, but the fact of vegetative reaction begins the process.

Certain vegetative facts are true of all nervous patients. And we feel that vegetative neurology can clarify the confused status of the nervous patient. We have in mind the particular type which is handled by the general practitioner as if it were an organic illness and which seldom reaches the psychiatrist or the neuropsychiatrist. Our view is rather for the general man in medicine.

Our observation of the average nervous patient, who is both a peripatetic philosopher and an ambulant invalid is that he is afflicted with a dual complaint. Although he is primarily an individual who adjusts faultily to his environment, by reason of his peculiar complex, yet he acquires secondarily a superimposed vegetative reaction which is common to the species as a whole. And that from his unrecognized duality of complaint comes a manifold confusion in treatment. Perhaps the situation can be clarified by separating the two factors.

As is pretty generally recognized now, the emotion of fear arouses a vegetative gradient in reaction in all men, varying from anxiety through various degrees of fear to a complete despair. And this gradient is pantomimed by visceral changes paralleling the tension in the vegetative nerves. Plain danger normally stimulates the vegetative nerves to energy, and this takes form in postural changes in viscera which are preliminary to thoughts of ways to escape, and thoughts are preliminary to ways of conduct in flight. An unrepressed emotion causes feeling, thinking and acting. This I hold is a truism. And yet in civilization no emotion is absolutely free to escape in thought and conduct unless modified by a conventionalism of thought and conduct.

The ill patient never reveals completely his fear of death. Even the ill must be brave to himself. But this is universal to the average nervous patient; that he suffers from his fear of disease. It is the secondary complaint which I referred to. It complicates the whole illness. Thus it is that the nervous patient suffers superficially from his fear of illness. It takes expression in his continual thinking about himself and in his continual running to doctors, and also it disturbs his inner organs.

So the nervous patient presents symptoms coincident with the degree of anxiety or despair which he holds about his illness. And these symptoms have arisen without direct connection with his primary condition. He is afraid because he is sick, and he becomes sicker because he is afraid, and so on *ad infinitum*.

Empirically most methods of treatment of neurotics by nonneurologically trained medical men—and most neurotics are so treated—get their results from the removal of this secondary fear of disease. And this is right, for the primary value of the medical man was to relieve the fear of death, and this remains the essential value of the mass of medical men throughout the world. But the attempt to relieve both primary and secondary conditions by this means often results in failure and generally in relapse.

Our observation is that practically all nervous patients that go to the general practitioner have symptoms arising from the vegetative nervous system as a result of the straight fear of disease. Symptoms which any individual would have as the evidences of fear if the suggestion of disease could be impressed on them as deeply as the peculiar nature of the neurotic permits it to be impressed. And the direct attempt should be made to remove this as a secondary condition and not as primary.

In study of the nervous patient this secondary fear and its symptoms exists as an outer shell which should be removed in fancy or practice if we are to see down to the primary illness. This shell in old cases becomes interlaced with the primary facts in such a way that a neurotic amalgam is formed. Seldom, however, is it so coalescent but what we can separate its components. And the secondary fear is a complete emotional reaction in which stimulus is followed by visceral tension, by ideational fortification, by motor expression. All emotions, i. e., energic tensions in vegetative nerves, are set in motion by stimuli in the environment or by ideas which are counterparts of environmental stimuli. And the stimulus in this secondary fear is the experience or the memory of the experience of a symptom which became through autosuggestion or through heterosuggestion the symbol of a disease connected with death or disability. The primary symptom is the stimuli which sets in motion secondary fear.

Now, the source of the primary symptom is indifferent, so long as it upon its appearance is interpreted as the sign of a disease. But, in practice, it almost universally arises as a visceral tension appropriate to a repressed emotion. And a repressed emotion is one which is prevented from compensation or fortification in thought, and is prevented from expression in action. And thereby the visceral tension is increased to the point that it comes into consciousness as a distress. The rapid heart of an unrepressed fear causes no discomfort because it freely flows into thought and action on the one hand, and because, on the other, it seems appropriate if it is perceived. The rapid heart of repressed fear, on the other hand, impresses consciousness as a cardiac alien, a dangerous visitant. It is at once elevated to the position of a danger stimulus instead of being kept a physiological normality.

In the following instance a repressed selfconsciousness, a fear of inferiority, appeared as a skin hieroglyphic, as a blush—the pantomime of shame. Interpreted as a sign of autointoxication it gave rise to a fear of death and of insanity, and produced the secondary fear that disabled efficiency and induced a deathwish. The primary symptom is at first connected with an idea and an action, but under the pressure of selfesteem it becomes stripped from its appropriate idea and appropriate action, i. e., becomes repressed and then exists only as a vegetative tension appropriate to a shame stimulus in the environment.

Inasmuch as the instance of its first appearance has the elements of a dramatic situation, and the instances of subsequent appearances possess many of the stage properties of the first, we can almost speak of dramatic reduplication, and can almost look on the direct stimulus as a cue. For the visceral pantomime occurs as appropriately to this cue as would a completed drama integrate itself with the words of actors, conditioned by rehearsal.

As a simple illustration of what we mean, let me review this case of Dr. H. A. Fowler's in his genitourinary service. He presents a secondary fear condition with a logical conclusion of mental despair and conduct merging on a suicide action. It is the extreme conduct of fear.

CASE.—A major sat at his desk in the quartermaster's department, in the centre of a room full of women employees. He was signing checks. Looking up, he met the direct glance of one of the clerks. Slowly a dull red flush began at the edge of his tightly buttoned tunic and spread up his neck, suffusing his face. It occurred against his will and for no reason that he was conscious of. His sole thought was that they must think him a brave soldier if he turned red when anyone looked at him. There was with it a dizziness and a confusion of thought that made him stop signing the checks. He wondered if his mind was affected.

From that day he would blush whenever he thought of blushing. The mere feeling of warmth around his collar would throw him into a panic, and he would leave the room. He lived with a subtle menace in his skin. The fact that he was a giant of a man only made him more selfconscious.

He consulted physicians from whom he learned of autointoxication, of focal infection, of blood pressure and of vasomotor disturbances, and under whose direction he exhausted appropriate means of combating these dangers without improving his own condition.

He stopped eating breakfast, he stopped smoking, he stopped using coffee, he took medicaments of varied form and hue, but his malady enveloped his life in a red haze fraught with utter despair. He grew nervous, irritable and despondent. He sought back streets, for on car line streets he averted his face when cars passed, for the flush would sweep his face each time as if a red shadow of the passing car. All the passengers seemed to be looking at him. He began to be aware that his hand was continually going to the holster of his automatic.

He was in the grip of a fear condition which had systematized around the primary and single symptom of a consciously motiveless flushing of the face. The primary symptom was a visceral pantomime. It had been made the sign of a terrible disease by autosuggestion. The fear condition was dissolved by the removal of the autosuggestion.

The key of the primary symptom lay far back in his boyhood. At the time that it first occurred he had been conscious of shame, knew the cause of the blush, and had felt like slinking away. He had overcome it, had forgotten it, and this return of the symptom seemed an entirely new and foreign element in his life. Yet one could trace connected events in the interval and in the process by which the emotion became submerged.

The first instance had been on the high school rostrum while he was speaking a piece. In the midst of an oration he had caught the eye of the girl he was going with. He had suddenly felt that she knew a fact about himself which she would despise him for. He had suddenly wondered if she suspected a fact about his habits which he was intensely ashamed of. The injection of this entirely irrelevant thought into his mind drove the memory of the oration away. He stammered, grew red, broke down completely and retired in disgrace. The blush was an appropriate reaction to a sense of inferiority based on an asocial habit.

It is unnecessary to show the steps of the repression by which he separated the idea of inferiority from its affect of shame and its action of slinking away. But he finally accomplished it. When it appeared this time it was accompanied by no appropriate idea.

Yet on analysis it appeared that the scene which staged the final illness was almost a reduplication of the primary schoolroom drama.

The employee who looked at him intently was a girl whom he wished to marry. (As a result of his illness he came to break off with her.) Her chum was the file clerk. They often exchanged confidences. That day he had seen the file clerk looking at his military record card. In this record was a statement which he had made in a moment of extreme frankness that he had suffered from an asocial disease. He had often regretted this afterward. It was a part of his past. But a girl might refuse to marry a man with such history if she knew it. As he looked back he wondered why he did not think at the time he blushed that perhaps this girl knew his secret, and he ought to slink out of her life. But no such thought came to him. Only the deadly sickening flush and a fear of losing his health.

The acceptance of the visceral pantomime as a logical reaction, and the displacement of the pantomime from its false position as a sign of disease, and the adjustment to the idea of inferiority dissolved all the illness. Three months later he married the girl of his choice without a blush.

Why the individual surrenders to his pantomime may contain the secret of why a neurotic is a neurotic. Selfconsciousness is a vegetative vice common to most children at some stage of their progress, but not all fall victims to the neurosis. Adler may be right in thinking that an innate and constitutional inferiority of organs decides it. At least we are on the road to find out.

In this connection the evidence of an individual who did not fall a victim to vegetative disturbance is interesting. I suppose there never was a more dauntless platform orator than Dr. Anna Shaw. Yet on her first rostrum appearance she fainted, recovered, returned to the stage and finished with honor. Feeling, as she said, "that if I let that failure stand against me, I could never afterward speak in public." "Yet," she continues, "those first sensations of stage fright have been experienced, in a lesser degree, in connection with each of the thousands of public speeches I have made since that time. I have invariably walked out on the platform feeling the sinking sensation at the pit of the stomach, the weakness of the knees, that I felt in the hour of my debut."

This is the very pantomime which in the neurotic becomes the starting point of the secondary neurasthenia.

Every student of today should be instructed in the physical symptoms of fear, so that he can abstract from any nervous condition the straight vegetative reaction due to the suggestion which has arisen on the primary symptom. As well as the mental condition and the conduct condition. To say "not to worry" and "not to run to doctors" is to say "do not be natural." It is the original premise that is illogical not the subsequent reaction. The distinction between the primary and secondary layers of the illness is necessary to clear thinking.

In using the term primary visceral pantomime we use a word of hitherto unscientific meaning. But it seems to us a very useful word which may be made to carry a definite meaning. It is the visceral element of a perfectly normal emotional reaction which has been raised to the *n*th power. In its normal relation to an emotional stimulus, an emotional thought or an emotional action, it excites no apprehension. Everyone is accustomed to accept a physical element in their normal emotions. The blush of embarrassment, the sinking heart of fright, the pounding heart of anger, are known and accepted. They are visceral pantomimes which everyone observes and often reads character by.

It is only when repression robs the emotion of its true thought and its true action that the visceral element comes into consciousness as a strange feeling. It becomes both more forceful and more intrusive into our awareness. It remains as true a reaction to a stimulus as it was when the other emotional elements were present.

Also it becomes conditioned just as an act is conditioned. The angry tantrum of a child becomes no more a habit than does the conditioned pylorospasm of an angry stomach which is blocked from letting its energy out in the tantrum. It becomes a part of character. It is as true a posture as the sneer or the clenched fist.

It is in relation to the conditioned pantomime that vegetative neurology is becoming of value. It shows the value of this fragment of the repressed emotion as a part of the organism's attempt to react to its stimulus as a unit. It is a fossil from which we reconstruct the mastodonic whole of the emotion. It reveals the machinery which makes a thing which becomes the source of a secondary neurosis.

In the individual environment reaction only that part of the environment which acts as a stimulus is important. It is important because it becomes the symbol and produces the symbolic idea which can thereafter react the stimulus function.

Most emotions wear paths through memory tissues in childhood. Each individual acquires a collection of symbols peculiar to himself. He develops visceral pantomimes specific to his symbols. This is character. It is also physiology. No universal symbolism can be applied to anyone without danger of error. The man reared in Hongkong and the man raised in Emporia possess different galleries of symbols.

Upon the impact of the stimulus the great vegetative apparatus is set in motion. There moves toward a purpose all the involuntary muscles, the vital organs and glands. Metabolic energy is created, transformed, distributed and expended. Expenditure tends to be changed into mental or physical action. The purpose is to adapt the organism to its environment for its biological good.

Let expenditure be denied to the mind and to the muscles and this energy acts as if it backed up into its sources. Normal physical elements are raised to the *n*th power, become disagreeable, and are felt as symptoms. A visceral pantomime becomes apparent. Although the repression arises in children from a fear of others, yet in the adult it arises from that loosely organized systematized fear we call conscience or selfesteem. An act or thought is improper; therefore it is checked or put out of mind. Culture is a great dam built across the natural stream of vegetative energy. The greatest quality of the human organism is that it becomes civilized without losing health. There seems to be a definite vegetative law of energy, that when expenditure is prevented the pressure rises in the viscera, producing evident pantomimes. The symptom is the index that we have passed the Plimsoll mark of overloading. The work of reducing visceral pantomimes into terms of blocked emotions is gradually being done by various specialists.

The dermatologist, Hazen, speaks of some forms of skin disease as if they were emotional hieroglyphics. Nose and throat men, surgeons, gynecologists, are recognizing symptoms which pantomime a universal emotional alphabet. Always this work needs auditing by experienced laboratory men and internists. But certain general truths are already evident.

Once the pantomime is recognized, its beginning, evolution and detachment from the complete emotion is easily verified. Its beginning is usually in childhood. It may exist for years as an accepted part of a known emotion. There comes a time, however, when it is separated from its other elements. It may now at any time become the isolated pantomime which holds the key to the primary complex.

A patient of Dr. Charles White's was wont to vomit whenever her mother kissed her. Granting the filial impropriety of this pantomime, it was still a true answer to a stimulus. An answer that the stomach tube failed to withdraw from the stomach.

It was a primitive reaction. The natural effort of an organism to reject a poison which it cannot run from. It became a pantomime for that very reason, the refusal to think or act with vegetative naturalness. But it revealed the secret of the patient's whole illness, a neurosis simulating hematomyelia. You may ask did the patient know that she hated the mother and could not get away from her because of an affective fixation. No, she did not; but there was a time in her childhood when she realized it very acutely. It was only by extreme selfreproach that she had overcome and repressed it. Indeed, she had rather be sick than be ungrateful. It is for this reason that the illness is clung to. It is easier to be sick than to have wicked thoughts. The secondary neurosis in which the mind and muscles are busy seeking cure of disease, by its very activity prevents the repressed thought from bothering the patient.

Dr. Mallory had a patient that suffered from a grinding pain in the stomach. For three years other men sought diligently to prove a gastric ulcer. The patient's whole life of thought and action was related to the fear of gastric ulcer. The pain was nocturnal. It was invariably preceded by an anger dream. In her childhood she had had a visceral pantomime of upset stomach when her father, who was a great prude, criticized her conduct. That was twenty years before. She had married to get away from home. Three years ago matrimonial infelicity had thrown her back to the parental roof, a dependent on her father. As if she were still a child, he began to correct her ways of doing and dressing. Did she have a tantrum? No. Now her "feelings would be hurt," and she would retire and awaken sick. As soon as the reduplication of the childhood drama was revealed to her, she felt she must get away. Immediately the pain ceased. She returned and the pain returned. Her own common sense finally cured her by recognizing the value of insight.

As I have said, the simple elements of that vegetative reaction we call emotion are three: the visceral pantomime, the idea, and the action. In terror a visceral phenomena occurs, including rapid heart, raised blood pressure, a mental phenomena of the idea of flight from danger, and a conduct phenomena of running or hiding. Sometimes the repression of the idea which leads to the overloading of the viscera with energy does not rest there. As the dammed up energy still rises it thrusts out into mind a new and false idea which can serve as the expender of the intolerable energy. We have then a visceral pantomime which forces a false thinking, and a secondary neurosis founded on the fear of a thought instead of a symptom. The thought is true to a general emotion of fear, but false to this particular instance carried by the thought. A patient of Dr. Verbrycke's suddenly fled from her three months' old infant, crying that she was afraid of the idea that she would strangle it. A blind emotion had acquired second sight. The repressed emotion was anger. Was there a logical reason why she should pantomime anger against anyone? Yes. But she had had no anger against anyone. However, an impartial observer would have said that she should quite naturally have been angry.

The facts were these: Reared in an affectionate Southern family where she had had an infantile fixation of affection on her mother which had persisted into mature life, she had married a Northern man and gone with him to live with her mother-in-law and four sisters of her husband who were jealously devoted to him. She was met by a cold wall of dislike. A sense of duty forced her to repress. She endured. Her stomach mechanism broke down. Her health improved, but suddenly this thought came. In her dreams she made angry attacks on men like her husband and women like her mother-in-law, but never against a child. As a child she had pantomimed repressed anger against her father, who had been brutal to her mother. As she gained insight, her false thought went away, and she found in its place a righteous indignation against her mother-in-law, which led to her moving as far West as she could go. At once she improved.

Then, too, the repressed energy, denied expression in true actions, may escape in false actions, and a secondary fear of the actions may make a secondary neurosis. These cases in particular may, as this one did, overlay a pantomime which hides a præcox. This patient of Dr. Mallory's pursued the futile occupation of washing his hands seventy times a day. There were germs on them which might injure others. His compulsive actions aroused quite logically the fear of insanity. His emotion was guilt, and the repressed thoughts and true actions had been the expiations for sin. His primary pantomime was relieved by the false actions, so that his health improved with the development of the compensatory hallucination.

Such a case is one for a psychiatrist, and the duty of the vegetative neurologist looks two ways; not only does he need to keep clear of organic disease by using the diagnostician to give his patient a clean bill of organic health, but he also must keep in touch with the psychiatrist, so that the unsound mind may be detected and appropriately treated

As I have said, the primary visceral pantomime is first staged in childhood and is then forgotten. The vegetative habit is retained, and from time to time recurs under appropriate stimulation. There comes a time when it is registered by the judgment as an illness, and, under the influence of medical suggestion, opinion can build up the systematized delusion of hypochondria. A patient of Dr. Newell's with a vertigo had had years of sanatorium treatment, had had an appendectomy and much other treatment, to no avail. He completely recovered through the dissolving of his hypochondria and by adjustment to the emotion which caused the primary pantomime. The primary instance had been definitely connected with a fearsome relation with his father. He had been unfortunate in having a general manager over him who affected him just as the father did. It was necessary to change his employment. His primary vertigo was a pantomime of fear. The appropriate action would have been flight instead of gastric lavage. The first instance with the father was twenty years before; for fifteen years he had been with this general manager, and for the past seven years he had interpreted his symptom as a disease.

The interpretation of the original incident may be the keystone of most of the illness. To an overworked newspaper editor during the war, his friends suggested he would break down. He was overworked. His predecessor had broken down. He was apprehensive. His idea of a complete breakdown was the mental picture of a friend with shaking palsy. He feared it. One day he essayed to write his name while standing and with no support to his elbow. His arm was taut and in a favorable position for a wrist clonus. It came. At once he thought "I'm done for." At that his head began to nod synchronously and the pen fell on the floor. From that time until cured he was unable to write his name. He developed many neurasthenic symptoms from the fear of incapacitation and the fear of insanity. With the removal of the symptom, all the secondary fears and symptoms disappeared. He has been perfectly well for nine months and has done the best work of his life.

Here we have an anxiety state built up on the interpretation of a tremor of the hand, a tremor which was once made a pantomime of fear by the striped muscle adaptative mechanism of fear. This pantomime was conditioned by prior emotional paths and was definite and predictable in light of past experience. That is one thing. The history of the conditioning is definite as well as intriguing. But the greater part of the sickness and the major part of the resulting ill health was due to natural reactions to a false interpretation. The primary pantomime is but the handle upon which the pinwheel of the neurasthenia spins around and around, having no discernible beginning or end in itself. It is a vicious cycle which cannot be broken by treatment of the neurasthenic symptoms *per se*. Time must be taken to investigate causes lying outside the endless chain of the cycle. However bizarre this may seem, the results of breaking the cycle in this way are registered in more cures than any other means I know of. To secure the memory record lying outside the neurasthenic cycle may require varied means and ways of associative recall. It is in a way of mental analysis. But it avoids the psychoanalytic technic of Freud, and it avoids the introduction of universal symbolism. It takes the symbols of the patient as the only reality of the patient acting as a unit. Sex, to be sure, may be the symbol that causes the recoil of the patient from reality and the damming up of his emotions, but it is just as likely and probably more so in our civilization to find that fear of personal inferiority or loss of the good opinion of others is the decisive and conditioning emotion.

One other case: A patient of Dr. Leech's some years ago, while acting as bank teller, paid a bad check for twelve hundred dollars. He took the responsibility and covered his deficit with his personal note to the bank, with whom he had been a trusted employee for twenty years. The insufficiency of his meagre salary forced him to earn the money by overtime work. He missed dinners from time to time, and often worked all night. It seemed an injustice of fate to a man inherently honest who had a straight record of trustworthiness. He worked against a strong feeling of aversion. The trouble fell heavily on his wife, who was an invalid and whom he had protected all his life from undue anxiety. It was harder because of her solicitude for him. An emotional avertive reaction showed in his writing hand as a cramp. The interpretation of this cramp as the symbol of an imminent incapacitation began to undermine his nerves. Mental anxiety developed, with high blood pressure and a goitre. In this neurasthenic state, one day, a package of nine bills, each of the denomination of a thousand dollars, vanished from his window. The result of his twenty years of honesty was that the bank asked him to make it good. He crumbled. It was like a blow on the head. He resigned. But his cycle of neurasthenia had organized itself in the goitre. He was permanently injured. Always one may wonder why a primary emotion causes the particular pantomime it does, and also why that particular pantomime means more to him than to anyone else. And always the secret lies in the particular conditioning of emotions that have occurred outside of and previous to the neurasthenic cycle.

In this bank clerk, for instance, for twenty years a writer's cramp was associated with the strain attendant on the implication of dishonesty. When he was twenty a cramp had developed in a fellow clerk as the result of a run on a bank. In a bank run the subordinate who meets the irate depositors at the paying window feels as if he was somehow included in their indictment of dishonesty. He reacts with the emotion of shame. Now this man, his friend, being thus incapacitated, took up carpentering and thus made a living. Unconsciously the patient thought of carpentering as a refuge for a broken bank clerk. He developed a hobby, without insight into its motivation. He rigged up a carpenter shop in his home, and possessed two hundred dollars' worth of fine carpenter's tools. Strangely enough, this hope was jolted at the same time he resigned under fire. His old friend appeared, completely broken by a palsy; he had to lead him across the street. Carpentering had failed. He had done well, he said, in Canada, until one day, while shingling a barn in Saskatchewan, a tornado had unroofed it and buried him in the débris. "He had been," he said, "no darn good since." Fate was inexorable.

In the case of the editor who had climbed a ladder of ambition planted when he was nine years old: Had come from newsboy, office boy, printer's devil, through the successive rounds of newspaper experience to the city desk. He had always been subject to tremor if accused of dishonesty. His security lay in being above suspicion. When he was seven he had pilfered a small sum; had been dragged before the town constable, a man who rode a white horse and was the eminent symbol of authority, and threatened with the reform school. He could never recall the experience without a shudder. Now, the day that his tremor appeared he had been accused by the owner of the paper, quite unjustly and through a misunderstanding, of being dishonest. He had been thrown back into an emotional state just like that of his childhood. It favored the development of the wrist clonus. Then the secondary cycle began.

CONCLUSIONS.

Thus it is that the vegetative neurologist draws certain premises and conclusions regarding the nervous patient as he is met with in every practitioner's office. There is a very definite group that fulfill these conditions.

First, the patient is reacting to environment as a unit, and he is reacting through his emotional apparatus in the direction of an instinctive adaptation.

Second, the adaptation of the emotional preparation in the viscera tends to flow out in mental or muscular expression.

Third, that if this outflow is prevented in mind and body, then the visceral disturbance becomes so pronounced as to appear as a symptom or pantomime.

Fourth, that it is peculiar to the individual to erect his environmental stimuli into symbols or symbolic ideas which gain a fixed and definitive power. That it is peculiar to the individual to develop a definite manner of visceral pantomime, which always remains consistent with the environmental stimulus.

Fifth, then on top of all this is the tendency to accept the result of the above, the visceral pantomime, as a disease, and taking disease as a premise he erects a neurasthenic cycle which revolves in a circle of increasing fear symptoms. He is afraid because he is sick and gets sicker because he is afraid. And this circle is closed and shut off from the original inlet into the maze, the complex which produced the primary pantomime.

ROOM 1002, MEDICAL SCIENCE BUILDING.

Vertigo from the Point of View of the Otologist*

By WALTER A. WELLS, M. D.,
Washington, D. C.

Definite realization that the posterior portion of the labyrinth is not part of the acoustic organ, but performs some function of supreme importance in connection with complex muscular movements, dates from experiments made in 1828 by Flourens on the semicircular canals of pigeons.

The experiments later on of Goltz (1820), of Von Cyon (1873), and, about the same time, of Breuer, Mach, and Crum-Brown, and then, finally, the classical experiment of Ewald (1887), proved conclusively that the posterior half of the labyrinth was the seat of the special sense of space appreciation, and intimately connected with the maintenance of body equilibrium. Although these studies and experiments evoked profound physiological speculation, their clinical significance was apparently overlooked, and it was not until the publication in 1861 by Ménière of his famous case of hemorrhage into the semicircular canals that it was recognized that these organs might be an important seat of lesions giving rise to vertigo.

The subject of vertigo has remained, nevertheless, in a somewhat nebulous state, and conflicting assertions are still put forward by clinicians with regard to its essential location and manner of origin. To properly understand vertigo and its causes, it is necessary to know something of those functions whose loss or disturbance leads to its occurrence.

Equilibration is the only term we have to connote such a function, but equilibration and vertigo are not in all respects antithetical terms. There may be, on the one hand, a disorder of equilibration originating in certain of the physiological paths upon which equilibration depends without vertigo, and, on the other, it seems possible to have a subjective sensation of vertigo with none of the objective phenomena which are considered a necessary part of active disequilibration. It is necessary always to consider equilibrium in connection with two other functions with which it is intimately connected: viz., coordination and space appreciation. Considered together, these functions are maintained by the harmonization within the brain of impulses of two kinds: viz., those originating without the body (exteroceptive), and those within the body (proprioceptive).

Under the exteroceptive order of impulses we have visual impressions, and the sense of touch and pressure. It is to be observed that these are to be classed as conscious processes, and that they operate intermittently and on demand. The proprioceptive impulses include those which originate in the joints, tendons and muscles (kinesthetic sense) and those which originate in the endolymph movements of the static labyrinth, both of which, being of a continuous character, operate as they need to do, subconsciously.

As we have intimated, while all the paths of afferent impulses contribute something to perfect equilibration, one may fall out, having its place taken by another impulse, and it may be without vertigo. The effects of a loss of the impulses from muscles and joints is to bring about a state of ataxia, but, so far as I know, lesions in this path are not at any stage attended with vertiginous attacks. As regards vertigo originating from disturbances of the sense of touch, this is most doubtful, though it has been said that some very sensitive individuals will have a sense of giddiness on stepping with bare feet upon material of a soft and velvety feeling. Unquestionably, the two most important sources of impulses and the two whose disturbance is most likely to give rise to vertigo are those situated in the head segment. Visual impressions are no doubt important to proper spatial appreciation and equilibrium. This is shown by the unsteady feeling and perhaps vertigo which some persons experience on looking from the top of a precipice to the great depth.

Oculists usually say, however, that it is the muscular disorder which most often gives rise to vertigo, and is it going far to infer that the intimate dependence of the action of eye muscles upon labyrinth tonus has much to do with vertigo of this kind? The static labyrinth is to be distinguished from other sources of impulses to maintain equilibrium, in that it is an organ devoted solely to this function. It should, therefore, be regarded as the seat of a special sense, the sense of spatial appreciation of equal dignity with the special senses of hearing, taste, smell, and other senses, for it has, like them, a peripheral sense organ with an exclusive function, a special conducting nerve to carry the impulses and a central station to receive them. This special sense is resident chiefly in the cristæ of the semicircular canals, but also in a measure in the maculæ of the utricle and saccule. The three semicircular canals, placed each at right to the other two, are so disposed to correspond with the three dimensions of space, and the movement of endolymph to and from their ampullar extremities, acting upon the delicate epithelial hairs, serve beautifully to apprise us of motions of the head in every direction.

The maculæ, the nerve end organs of the utricle and saccule, are analogous to the cristæ of the semicircular canals, but have significant points of difference. The hairs are shorter and are held together by a denser mass of substance, the otoconium. Contained within the latter are one or more solid particles, the socalled otoliths.

The theory chiefly held is that the saccule and utricle are to inform us of movements in a linear direction as the semicircular canals of rotary motion. But it seems more reasonable, in view of their structure, to assume that they are especially adapted to the appreciation of motion with reference to the direction of gravity. As the arrangement of the ampullar cristæ are eminently competent to sense quick movement in every direction, that of the misnamed maculæ acusticæ is such as to give information of changed position of the body. In other words, the saccule and utricle are the true static organs, just as the semicircular canals are the true kinetic organs of the spatial sense.

We cannot discuss the functions of the labyrinth in its relation to vertigo without reference to the tonus impulses which it gives out constantly to all the muscles of the body. These are more in evidence in respect to the muscles of the eye which need to vary with every change of position of the head; but they also go to all the muscles of the body, which for the purpose of equilibration must be differentially innervated, as the body assumes different attitudes.

Having considered, though in a cursory way, the various elements upon which equilibration depends, we are now in a better position to say just what we mean when we use the term vertigo.

In its broadest sense, vertigo may be defined as a temporary state of mental confusion, marked by disorientation and due to a central disharmony of the impulses which subserve spatial appreciation and maintain equilibrium. This definition is, we believe, comprehensive enough to apply to vertigo of any origin, and of the most varied type, including those vague and illdefined sensations that are sometimes experienced, but cannot be described. Vertigo, in a more restricted meaning of the term, may be defined as a sense of disorientation attended with an erroneous impression of rotary movement. This is, indeed, a definition of vertigo true to its etymological origin (*vertere*—to turn). According to our conception of the case, vertigo of this type can have its origin only in impulses emanating from the true kinetic portion of the labyrinth or some part of the vestibular mechanism which conducts or receives these impulses.

Now, after what we have said with regard to the manner in which equilibration is maintained and vertigo induced, there need be no misunderstanding as to the question whether vertigo may arise in this organ or in that. If the lesion supposed to cause the vertigo lies outside of those sources which give rise to impulses that go to maintain equilibrium, the vertigo which it causes must necessarily be of secondary origin.

We have no quarrel whatever with those who speak of gastric vertigo, renal vertigo, hepatic vertigo, cardiac vertigo, and others, if it is clearly understood that the final or direct cause of the vertigo after all was somewhere in the vestibular apparatus; and this is, I think, not a narrow specialistic viewpoint. It means, in fact, that in a certain number of cases, while the disorder is strictly in the domain of the otologist, he must, reversing the more common practice, refer to some other department for the discovery of the original focus, on which eventual recovery depends.

In all cases, whether the original lesion lies directly in the vestibular apparatus, or whether this be only secondarily affected, the necessity of a clinical investigation of the state of this organ remains, for it is obviously only in this way that we can determine whether the disturbance here is of a functional character due to trouble elsewhere, or whether there is present an organic lesion of the vestibular organ itself. It is only in the most recent times that we have come to have adequate means of examining the static labyrinth.

Until the advent of the Bárány tests, this organ was from a clinical point of view an unknown region. We had but vague ideas of its pathology, and the determination of its relation to an existing vertigo was as a rule unscientifically based only on the simultaneous involvement of the acoustic division.

The Bárány tests have completely reversed our attitude, and, speaking to the point of the reliability of these tests, I do not hesitate to say that the domain of practical medicine furnishes no other example of the testing of sensory organs in which the results can so well be depended upon for their precision and accuracy. This is owing to the fact that we do not need to be guided as in examination of sight, hearing, taste and other senses by the patient's interpretation of his subjective sensation, but we can at will, by artificial stimulation of the vestibular functions, obtain responses of an objective character, constant in their occurrence, definite in their form and duration, and, therefore, dependable and measurable.

The Bárány tests consist, in a word, in setting up either by rotation or the caloric method an endolymph movement in the ampullar extremities of the semicircular canals, which induces two orders of reaction, viz., nystagmus and vertigo. The latter, a subjective sensation, is represented fortunately by two objective phenomena, viz., a tendency of the patient to fall, and with closed eyes to over or pastpoint beyond a certain fixed object in space. These two phenomena bear a definite relation to the vertigo, in that they are always in opposite direction, as also to the movement of the endolymph in the canals, being with the latter always in the same direction.

The value of the Bárány tests lies in the fact that they enable us to determine in the first place whether the vestibular tract is or is not affected; secondly, if affected, whether the lesion is peripherally or centrally located, and, thirdly, if centrally located, to determine, in many cases with remarkable accuracy, the seat of the lesion.

1. If the result of the tests is to give a perfectly normal response to the various kinds of stimulation, it can be confidently stated that there is no organic disease in any part of the vestibular mechanism. If, however, a deviation from the normal is noted in any response—that is to say, in any reaction of any of the canals from any method of stimulation (and assuming that the tests have been properly and carefully made)—the inference is justified that there is an organic disease in some part of the vestibular mechanism.

2. The next thing regarding which we always want information is as to whether an alleged lesion is peripheral, i. e., of a purely labyrinthine type, or whether it is centrally located. Briefly speaking, the characteristic of a peripheral lesion is that it affects all responses equally. A peripheral lesion is suggested, however, if there is a proportionate impairment of response from both vertical and horizontal canals, or if there is a proportionate impairment of two kinds of reaction from any canal. Conversely, it is strongly indicative of a central lesion if one canal gives both normal responses while another does not, or if, by the stimulation of a selected canal, we get a perfectly normal reaction of one order with a failure of the other, as normal nystagmus without vertigo, or vice versa.

3. The localization of a centrally placed lesion affecting the vestibular apparatus has been made feasible by reason of the differentiation of the various central vestibular pathways. In the first place, not only do the paths which carry impulses that excite vertiginous sensation separate at certain points from those which produce the nystagmic reactions, but also (and this, by the way, is the important contribution of the Philadelphia School of Neurootology) it appears on the basis of clinical if not anatomical findings that the fibres from the horizontal canal follow a different pathway than those from the vertical canals.

It is not possible to go into a detailed description of the vestibular tracts, but it is important to know that the paths which convey vertiginous impulses, separating from those which contract the eye muscles, pass over into the cerebellar nuclei by way of the inferior and middle peduncles.

To determine, therefore, the state of the cerebellar tracts, we must examine the response with regard to the reaction of vertigo, or as it objectively represented by falling and pastpointing. As an example, if, after douching and turning, you get normal pastpointing of both arms in both directions, a gross lesion of the cerebellum is unlikely. The variation in paths of the horizontal and vertical canals has, likewise, served as an aid to localization.

The fact that, while the fibres from the horizontal canal go to Deiters's nuclei in the medulla and there divide into two tracts, one to the eye muscle nuclei in the posterior longitudinal bundle and the other to the cerebellum by way of the juxtarestiform body, whereas, the fibres from the vertical canals seem to go into the upper half of the pons, before dividing into vestibular ocular and vestibular cerebellar tracts, the latter passing over by way of the middle instead of the inferior peduncle, has given ground in certain cases for the drawing of deductions with regard to the location of lesions in the pons and neighboring structures.

What the proportion is of the vertigoes, that must be assigned to the vestibular apparatus in general; or what the relative proportion may be between peripheral and central lesions, is a matter for future statistical studies based upon labyrinthian tests, in connection with clinical and pathological data.

Vertigo is certainly a common symptom in aural practice; much commoner, in fact, than one might judge from the voluntary history given by the patient. The average patient can think of vertigo as caused by gastric or bilious attacks, a mental association attributable in the first place, no doubt, to the occasional accompanying nausea and vomiting, but an equilibratory disturbance seems too irrelevant in connection with his ear disease.

As to the results which can be obtained in the treatment of vestibular vertigo, they will be as various as the character of the lesion causing them. The degree of vertigo is by no means a measure of the gravity of the underlying disease, because as we may have a very slight vestibular disorder with most distressing vertigo we may, on the other hand, have only a mild vertigo with a grave lesion.

Every aurist must be struck with the brilliant results which have sometimes followed such slight operations as the clearing up of an Eustachian obstruction, breaking up adhesions about the mouth of the Eustachian tube, removal of pressure on the tympanic membrane, and measures directed to overcoming catarrhal and suppurative conditions.

Not least among the instances of gratifying results in the relief of vertigo are those in which the cause is a toxic labyrinthitis or toxic degeneration of the vestibular end organs due to focal infections, the focus lying most often, no doubt, in neighboring parts as a suppurating nasal sinus or a septic tonsil, but not infrequently, however, in a distant organ, such as stomach, intestinal tract, liver or kidney.

CONNECTICUT AVENUE.

Visual Errors in General Practice*

By LOUIS H. SCHWARTZ, A. B., M. D.,
New York,
Adjunct Attending Surgeon, Eye, Ear, Nose and Throat Hospital.

In preparing a paper on the eye, to be presented before a body composed of practitioners from every branch of medicine, it would seem to be eminently out of place to select a topic of a purely ophthalmological character, such, for example, as disease of the fundus oculi or disturbances due to the ocular muscles. The question of visual error is more likely to be of general interest even though it is much simpler, and will, therefore, be the subject for which the writer begs a brief consideration.

The large factor which imperfect vision plays in everyday practice does not seem to be fully appreciated, or, let us say, is too often overlooked in diagnosis. In the course of a number of years of both general and special work, I have had many instances of people coming with various symptoms not directly referable to the eyes, where, however, the real trouble was a disturbance of vision. When the patient consults the physician because of poor sight, or a tired, heavy feeling in the eyes, the case is usually easy, because the doctor's attention is directed to the eyes; so, too, as a rule, when the principal trouble is headaches.

But when the symptoms are of a more general character, such as vertigo, nausea, vomiting, nervous irritability, drowsiness, or neuralgic pains in the head, then the likelihood of visual disturbance as the possible cause is less likely to be thought of. A brief outline of a few selected cases, which came to me while I was still engaged in general practice, will serve to illustrate this clearly, and will show that these types are not uncommon. I do not include any records of patients who came expressly about their eyes or who were referred by other physicians for ophthalmoscopic examinations.

Case I.—Mrs. Mary F., aged thirty-six, occupation housewife, came complaining of disturbances of digestion, with vomiting, nervous irritability, and occasional severe neuralgic pains in the head, which she attributed to her stomach. She had consulted many physicians during the preceding ten or twelve months. One of them had washed her stomach; another treated her for cervical lacerations and leucorrhea; a third said she was run down, poor in blood, and suffering from nervous exhaustion. She had received tonics, massage, electrical treatments, but all without avail. She was very much discouraged; said she had lost faith in doctors and spoke of suicide.

Even in general practice I had made it a habit to begin the examination of the patient, whose trouble seemed to be of a general nature, with a test of the visual acuity. Mrs. F. was wearing glasses at the time she came to me, and when I suggested beginning with her vision she immediately volunteered the information that she had no trouble with her eyes. In fact, she was very well pleased with the lenses she was wearing, because, she said, she was blind without them. However, I insisted, and found her vision was O. D. 3-200, and O. S. 4-200; with her glasses it was 20-20 each eye. She had received these lenses about a year ago from an optician. Neutralizing the glasses, I found that she was wearing R. Sph. —11, L. Sph. —10. After completing her examination otherwise, I shadowed her under homatropine and found that she had O. D. 8 diopters myopia with 1.50 astigmatism. I prescribed R. Sph. —6.00=Cyl. —1.50 axis 180 and L. Sph. —5.50=Cyl. —1.00 axis 180°, which gave 20/30 vision, each eye.

For a few weeks after receiving the weaker lenses, she complained that she did not see as well, but she gradually became accustomed to them, and was very happy to find that her symptoms were very rapidly disappearing. After two months they had left her entirely.

This case illustrates two important points: First, the reflex connection between the eyes and the gastrointestinal tract. This fact is well known to every medical man, and has been demonstrated by physiologists again and again. But we are too likely to lose sight of the significance of this association, when the patient's symptoms point principally to a digestive disturbance. The second feature of this case is the demonstration of a common error, especially on the part of optometrists and opticians—the overcorrection of myopic eyes.

Case II.—Nellie M., school girl of eight years, had received a note from the school medical inspector that she had an orthopedic defect. It was very apparent that her posture was slightly stoop shoulder. Examination of the spine showed beginning kyphosis in the cervical and dorsal region. Her vision was R 20/200, L 20/100—. Tested under atropine, her refraction was O. D. —1.25 and O. S. —1.00, which gave 20/20 O. U., and this I prescribed. An orthopedic surgeon took care of the spinal condition, and she obtained a very good correction.

I have examined her eyes at least once every year since, to make sure that her glasses were always correct. The curvature of the vertebral column was induced by the faulty posture which she was compelled to assume while attempting any close work, such as reading or writing. These cases are fairly common.

Case III.—Mr. John A., aged twenty-seven; occupation, bank teller; complained of getting tired easily and feeling drowsy. Also suffered from periodical attacks of headache, about once every week. On this account he had been treated for malaria, though his blood never showed the plasmodia, in spite of repeated examination. General physican examination, including Wassermann, negative. Hemoglobin, 80 per cent.; teeth good; no evidence of sinus infection.

Vision, 20/20 each eye. Under homatropine vision 20/70— O. U. Accepts Sph. +1.00=Cyl. +.75 axis 90, giving 20/20. I prescribed the cylinders, put him on iron, arsenic and strychnine, and ordered him to do gymnasium work, and his symptoms rapidly cleared up. This patient's vision was apparently normal, yet he was suffering from latent astigmatism—also a condition met with rather frequently.

---

*Read before the Clinical Society of the Peoples' Hospital.

Case IV.—Miss Frances G., aged twenty-eight, stenographer, had been suffering from dizziness, nausea, and general irritability for many months. No menstrual disturbance whatever, and I could find nothing after a careful general physical examination which might cause her symptoms. Vision 20/20— and 20/30. With the glasses she was wearing her sight was 20/20 each eye. Her lenses were Cyl. —50, axis 180° O. U. They had been prescribed by an optometrist six or seven months previously. After testing under homatropine, I found that she had hyperopic astigmatism, and gave her a plus sphere cylinder combination, which, although it did not agree with her at first, soon relieved her of her dizziness and other complaints. This case illustrates an everyday error which results from testing young persons without a mydriatic—i. e., they select minus lenses notwithstanding the fact that their conditions is hyperopia. Moreover, weak minus cylinders must be prescribed only with the greatest care, otherwise they are likely to result in considerable harm to the eyes.

Case V.—Mr. Harry C., aged thirty-four, credit manager, suffered from periodical attacks of hemicrania. The paroxysms were so severe that he had to confine himself to a dark, quiet room for from one to three days at a time. During these seizures Mr. C. was unable to take food, sometimes vomited, and suffered excruciating pain. He had had very much medical attention, including röntgenographic examination of his head and teeth. Wassermann, negative; no malaria in the blood. One neurologist diagnosed the condition as migraine, and ordered gastric lavage and dieting; another considered it a trifacial neuralgia. An endocrinologist thought that the x ray plate showed disease of the pituitary gland and put the patient first on pituitrin and then on adrenalin. Neither of these measures afforded any relief. Mr. C. had a fairly high degree of myopia, but the fundus was otherwise normal. His vision was 6/200 each eye, and wearing Sph. —6.00, which gave 20/20+. These lenses had been prescribed five or six years before. Under homatropine he had five diopters myopia, and I gave Sph. —4.25, which gave 20/20—. An examination with prisms showed that there was a hypophoria of two to three degrees. I therefore added 1/2 prism base up over the left eye. He was directed to take a vacation for a few weeks and not do any reading at night. The attacks of hemicrania became less frequent and milder, and after several months left him entirely. This leads me to believe that his condition was due to overcorrection of his myopia, together with a muscular imbalance.

Case VI.—I was called one evening to see Mrs. Julia E., aged fifty years; occupation, housewife. She had been suddenly seized with intense headache, associated with vomiting. The latter symptom quickly subsided, but the pain in the head persisted and was agonizing. Pressure over the frontal sinuses and transillumination did not point to any infection of those areas. I tested her eyesight, and, to her very great surprise, found that her vision in the right eye was reduced to the perception of light with or without her glasses. I had myself examined Mrs. E. about a year previous to this, and my record showed her vision had been 20/200 without correction, and 20/20 with a plus sphere—cylinder combination which I had prescribed. I then tested her tension with the fingers and found that the right eye was considerably harder than the left. Pilocarpine and catharsis were immediately ordered, and yet the next day when I took her tension with the tonometer it was 105 in the right eye, i. e., about four times the normal.

I suggested immediate operation, but the patient refused. After four days of vigorous treatment the tension came down slightly, but the pain had considerably abated; the vision was still as bad as ever. I pleaded with her to permit surgical interference in order to save her sight, and she finally agreed. An iridectomy was performed the next day, and she made a perfect recovery. This was a case of absolute glaucoma which could readily be mistaken for some other condition, with very serious consequence to the patient, if no attention had been paid to the visual acuity. In fact, I have another patient now who had a similar attack of pain in the head seven months ago. It was diagnosed by her physician as neuralgia. She is now blind in the left eye, and came under my care only last week with glaucoma in the right eye, too.

Case VII.—Mr. Irving J., aged twenty-four; occupation, chauffeur; came complaining of sore throat and pains in various parts of the body. Questioning elicited the information that he had had several attacks of sore throat and headaches, worse at night. Could not recall ever having had a chancre or an eruption. His vision was 20/100— O. D. and 20/20 O. S. This was a great shock to him, as he said his eyesight had been tested about a month previously for the police examination and was 20/20 each eye. Ophthalmoscopic examination showed a neuritis, and his Wassermann was returned four plus. Within a period of three months his vision came up to 20/40, after having received four salvarsan injections and mercurial inunctions. At this stage he had to go to Providence, and I have not heard from him since. Here was a young man going blind in one eye without having the faintest idea of it. Had no notice been taken of his visual acuity, the possibility of saving his sight might have been lost forever, as I have seen in scores of cases which came to us in the eye clinics.

Case VIII.—Frank L., aged twelve, school boy, was brought because he had chorea. The diagnosis of chorea had been made long ago, and he had been treated for this condition many times. The boy was a persistent bedwetter and was reported to be very inattentive in school. I noted that the boy had a habit of holding his head to one side, in addition to the fact that he squirmed about considerably. I began my examination as usual: Vision 20/40— in the right and 10/200 in the left.

With correcting lenses his vision was O. D. 20/20, O. S. 20/200. In other words, his left eye could be improved but very little. The reason for this was that it was a squinting eye. Hence the image formed on the retina was blurred and did not correspond with that formed on the right eye. The brain had therefore learned to ignore the impression entirely, and the eye fell into disuse—the condition known as amblyopia ex anopsia. Had the trouble been corrected in early childhood, his vision might have been good in both eyes. After prescribing lenses, the chorea was treated in the routine manner and improved considerably. Strangely enough, the bedwetting stopped also. Some cases of chorea are unquestionably influenced by, if not due entirely to, defective eyesight.

CONCLUSIONS.

From the foregoing cases it must be evident that, although no one would attempt to attribute the various symptoms mentioned as due to imperfect vision alone, nevertheless we do obtain a great advantage by ascertaining whether or not the eyes are emmetropic (with or without lenses). And, inasmuch as the question of normal vision can be determined, it is worth while doing in every case where there may be any suspicion or even possibility of the eyes being at fault. One might imagine that if a patient had any defect of sight, he would be pretty sure to know about it. Yet the experience of every ophthalmologist is that some persons may be totally blind on one eye without even suspecting it. Not only do most physicians fail to test the vision, but I have encountered instances where patients actually complained of ocular disturbance and the doctors paid no attention to the fact, possibly just because these practitioners do not do eye work. Every man doing general work should have a Sneller test card in his office and ascertain the visual acuity.

Each eye must be tried separately. If the sight is below normal, let the patient look through a pin hole made in a card, and, should he see more that way, it is almost positive proof that his sight can be improved with glasses. All this takes but a moment or two, and will very often give gratifying results. During the past years, many cases like those which I have described were referred to me by other physicians, sometimes for a fundus examination, but frequently the patients needed lenses only, or possibly a change of eyeglasses. Usually, however, these cases are seen first by the man doing general work, and, unless the errors are discovered by him, both the physician and the patient pay the penalty.

The Diagnostic Value of the Pupil in General Medicine

By JOHN H. BAILEY, M. D.,
Brooklyn, N. Y.

The importance of pupillary phenomena as an aid in diagnosis to both the specialist and the internist cannot be too strongly emphasized nor too often reiterated. The amount of information obtained from this source is at times truly surprising, and not infrequently supplies the link or maybe the sole evidence that enables the physician to arrive at a correct conclusion in an otherwise obscure and difficult case. This is well illustrated, to quote a single instance, in tabes dorsalis, where a reflexly immobile pupil is not uncommonly the first and, for a long time, the only manifestation of this dreaded disease.

To have an intelligent conception of the subject matter, it is necessary to review the essential anatomical and physiological facts pertaining to the pupil. The physician must also be able to discriminate between abnormal pupillary phenomena and the numerous variations in the appearance and activity of the pupils, which, although suspicious, are still within normal bounds.

The pupil, the central aperture in the iris, is determined by the state of two opposing muscles: the sphincter iridis, whose function is to narrow the pupil, and the dilatator iridis, which widens it. In health each muscle is constantly exerting its respective influence with the end to securing a perfectly balanced pupil. These muscles belong to the class of unstriped and involuntary muscular tissue, their action being neither governed by the will nor registered in the subject's consciousness. As a matter of interest, perhaps merely academic, it may be mentioned that these are the only muscles in the body of ectodermic origin, derived, as they are, from the pars iridica retinæ, embryologically the prolongation forward of the secondary ocular vesicle, a hollow protrusion from the prosencephalon or primitive forebrain.

The iridic muscles are supplied by the autonomic nervous system; the sphincter, by the parasympathetic by way of the oculomotorius; the dilator, by the sympathetic via the truncus cervicalis. The nerve fibres going to the sphincter iridis have their deep origin in a group of cells located in the foremost part of the lateral wall of the aqueduct of Sylvius — the Edinger-Westphal nucleus — whence they traverse the crus cerebri, emerging from the midbrain at the ventral border of the pons. They now course through the cavernous sinus and leave the skull through the sphenoidal fissure to reach the ciliary ganglion. The latter, lying rather deeply in the orbit behind and temporally to the eyeball, is the peripheral relay station, where the nerve fibres make connection with the necessary sympathetic cells, and, departing as postganglionic fibres incorporated in the structure of the short ciliary nerves, penetrate the sclera posteriorly, to be distributed eventually to the muscle cells of the sphincter. The intimate topographical relations in the mesencephalon of the centres of the sphincter iridis, musculus ciliaris, and recti interni, account for the association of pupillary contraction with accommodation and convergence. The dilator, receiving its innervation from the sympathetic, is under the control of a centre situated in the anterior horns of the spinal cord on a level with the last cervical and the two or three upper thoracic nerve roots. Nerve fibres arising from this centre proceed to the inferior cervical ganglion in the white rami communicantes of the above thoracic nerves exclusively, as cervical nerves possess gray rami only. Thence they continue in the trunk of the cervical sympathetic as far as the angle of the lower jaw, where they arborize with the stellate cells in the superior cervical ganglion. Issuing from these cells as new axones (postganglionic fibres), they enter the skull with the internal carotid artery, form a plexus in the cavernous sinus, pass through the sphenoidal fissure into the orbit, unite here with the long ciliary nerves (branches of the nasal portion of the ophthalmic division of the fifth nerve), and, anastomosing with the short ciliary nerves, are distributed with the latter to the iris. Some investigators assert that, besides the dilator centre in the cord, there is a second centre in the medulla, both centres being brought into relation by means of the lateral columns of the cord. Many believe that the socalled primary or lower pupillary centres in the midbrain may be directly influenced by the cortical or higher centres, e. g., the dilatation of the pupils that ensues under the stress of violent emotions, like anger or fear. The question is still undecided whether, in these circumstances, the increased size of the pupils is due to an inhibition impulse sent by the cortex to the sphincteric nucleus in the midbrain, or is the result of cortical excitation of the sympathetic centre. An endocrinology enthusiast might explain it on the basis of an irruption of chromaffine substance into the blood stream stimulating the sympathetic.

The examination of the pupils comprehends the size, the equality, the shape, and the several reactions.

The diameter of the normal pupil is two to six mm. Any measurement beyond this should arouse suspicion. Miosis refers to a pupil that is abnormally narrow; the opposite condition is designated mydriasis. In infancy the pupils are relatively small, reach their maximum size with full growth, and again diminish in middle life, and still more so in old age. The myope has larger pupils than the average; in hyperopia the reverse is true. In sleep the pupils are contracted in spite of the exclusion of all light from the eyes, doubtless ascribable to a relaxation of the dilator iridis from lack of sensory impressions.

Both pupils are supposed to be of the same size. Inequality of the pupils or anisocoria is regarded by Fuchs as always pathological. There is no doubt that absolutely healthy eyes may exhibit moderately unequal pupils. If the difference in size is not great, if the pupillary reactions are normal and the ophthalmoscopic findings negative, anisocoria has no significance.

The shape of the pupil is round. However, a pupil somewhat oval or elliptical, or even irregular, especially in the aged, may be totally disregarded if no ocular disease is present.

The normal site of the pupil is not exactly central, but rather slightly nasal. An eccentric pupil or corectopia is not very uncommon, and, if not due to iritic adhesions is of no import, being then, as a rule, a congenital anomaly.

Of all the pupillary phenomena, the most important are the various reactions. The response on the part of the pupils is prompt and vigorous, except in fatigue, ocular and general, and in old age, when the iris is no longer as resilient as formerly.

The pupils react to light, to accommodation or convergence, to sensory and cortical stimuli, in conjunction with other cranial nerves, e. g., the facial.

When light is thrown into the eye the pupil contracts quickly, in about half a second; dilates, contracts again, and again dilates, until a state of equilibrium is established: this is the direct reflex to light. During the test the fellow pupil, although shaded, also contracts: this is the consensual reflex to light. The direct and consensual reactions are of equal amplitude, but occasionally the directly reacting pupil is larger. The consensual reaction is readily understood when one considers the minute anatomy of the optic nerve. This nerve contains two different sets of fibres: fine visual fibres, and coarser, less numerous fibres, which are exclusively pupillomotor. The latter, upon reaching the optic chiasm, undergo, in company with the visual fibres, a partial decussation, some of the fibres proceeding to the sphincter nucleus of the same side and the rest crossing over to the nucleus of the opposite side. Accordingly, a pupillomotor impulse from the retina is conducted to both sphincteric centres and is reflected along each oculomotorius, resulting in a simultaneous contraction of both pupils. In some of the lower animals there is a complete decussation of the visual and pupillary fibres, in consequence of which these animals have neither binocular single vision nor a binocular light reflex. It might be mentioned, in passing, that the dilatation of the pupil in the dark is an active process—a contraction of the dilator iridis.

The simplest method for the general practitioner to follow in making these tests is to have the subject seated before a window in daylight and to request him to look far into the distance at a fixed object, thus eliminating the element of accommodation. If daylight is impracticable, the patient may sit on a chair with a good artificial light in front of him. The examiner, standing to one side, covers with a card each of the patient's eyes; and, while keeping the card over the left eye, quickly and carefully removes the card from the right eye, and notes the change that takes place in the latter. By reversing the procedure, the pupillary change in the left eye is observed. In this manner is obtained the direct light reflex. To obtain the consensual light reflex, we slightly uncover the eye to be examined, just sufficiently to enable us to see the pupil, and then alternately cover and expose the fellow eye.

There is a good deal of discussion as to the afferent path of the light reflex. The view most in favor is that this path originates in the pupillomotor area of the retina, an area about six mm.

in diameter, with the macula lutea occupying the centre. The pupillomotor fibres run in the optic nerve, undergo a partial decussation at the chiasm, and, upon reaching the primary optic ganglia, separate from the visual fibres; few of the fibres go to the corpus geniculatum laterale and the pulvinar thalami optici; the rest enter the corpus quadrigeminum anterius and thence continue on their way to the sphincteric nucleus in the Sylvian aqueduct. It is quite possible that here a second decussation occurs. The centre and the efferent path of this reflex arc are the Edinger-Westphal nucleus and the oculomotorius nerve respectively. As for the ciliary ganglion, its pupillary function is concerned chiefly with a reflex contraction of the pupil in any painful condition of the cornea or anterior uvea.

By the associated reaction of the pupils is understood their behavior when the eyes accommodate or converge. Whether it be the accommodative effort or the convergence that produces the contraction of the pupil, opinion is divided, the inclination at present being to attribute it to the convergence. The contraction is lively and of about the same extent as in the light reflex. After the pupil has contracted from the light reflex it will still further contract when the patient accommodates. The test is performed as follows: The patient, looking straight ahead to the opposite wall of the examining room, is now told to sight a pencil held at a distance of about fifteen cm. from him, and any change in the size of each pupil remarked.

The sensory reflex of the pupil consists of a dilatation of the latter upon irritation of a sensory spinal or cranial nerve. This is best demonstrated by drawing a pin several times over the skin of the neck along the anterior border of the sternocleidomastoid muscle. The reflex arc in this reaction is furnished by the stimulated afferent nerve, the ciliospinal centre and the fibres of the cervical sympathetic.

Excessive psychical activity, be it intellectual, as in deep abstraction, or emotional, as in fright, causes a dilatation of the pupils. Whether we are dealing here with a relaxation of the sphincter iridis or a stimulation of the dilator is still to be decided.

One might briefly mention the following reflexes: The cortical reflex of Haab, which is a constriction of the pupils when the subject is in semidarkness and concentrates his mind upon a light that he imagines is before him; the paradoxical light reflex, in which the pupil dilates instead of contracting when exposed to light; the myotonic reaction, characterized by the persistence of the pupillary contraction to convergence after the latter has been discontinued; the neurotonic reaction, a prolonged contraction of the pupil to light after the eye is no longer illuminated; and the Westphal-Pilz reaction, which is exhibited both directly and consensually and is distinguished by a contraction of the pupils when the patient attempts to close his eyes against resistance, obviously an associated movement of the pupils concomitant with a powerful stimulation of the facial nerve.

In tabes dorsalis pupillary abnormalities are of the greatest importance in affording valuable data for an early diagnosis, being frequently the initial and for many years the only symptoms present. The Argyll Robertson pupil and miosis are found in over eighty per cent. of the cases. In the Argyll-Robertson pupil, the light reflexes, both direct and consensual, are lost; but the pupil narrows promptly upon accommodation or convergence, even in the presence of marked miosis. Both eyes are almost invariably affected, differing at times only in the degree of involvement. The vision is good if there is no associated optic atrophy, which tends to prove that in the optic pathway there are two kinds of fibres—visual and nonvisual or pupillary. It must be borne in mind that before the typical Argyll-Robertson pupil appears there is a stage when the reflex response to light is merely sluggish and not abolished; hence a tardily reacting pupil is very suggestive and demands a search for corroborative evidence such as a Wassermann test. The statement is often made that an Argyll Robertson pupil spells syphilis. It may be found, however, in lesions other than luetic, e. g., injuries to the base of the skull, and tumors, hemorrhage and inflammation in certain areas in the mesencephalon. The pathology of the Argyll Robertson pupil is usually a tissue degeneration in the brain somewhere between the corpus geniculatum laterale and the sphincteric nucleus. Miosis, which is next in frequency to the reflex immobility, is due to the relaxation of the dilator iridis, and is attributed to parasyphilitic affection of the cord in the vicinity of the ciliospinal centre. Accordingly, since there is an interruption in the sensory reflex arc, the dilatation of the pupils to sensory stimuli is absent. Late in the disease, miosis may be followed by mydriasis and absolute immobility, which means that a paralysis of the sphincter nucleus has been superadded. This occurs, however, much oftener in general paresis than in tabes. The pupils of tabetics are frequently unequal and irregular. The physician, to guard against error, must bear in mind that small and deformed pupils may be dependent upon a local condition, e. g., corneal irritation, anterior and posterior synechiæ, and congenital pupillary membranes.

In general paresis of the insane, the Argyll Robertson pupil occurs frequently. At times the consensual light reflex is affected before the direct reflex. Inequality and irregularity of the pupils are often encountered, and that, too, early in the disease.

In cerebral syphilis the Argyll Robertson pupil is not common. Here we find as characteristic the fixed and dilated pupil. A wide pupil that is absolutely immobile and the phenomenon limited to one eye indicates that the lues has invaded the brain.

In the recent epidemic of encephalitis lethargica, pupillary abnormalities, in conjunction usually with other ocular disturbances, were frequently observed. The picture was generally that of a dilated pupil inactive to both light and accommodation, i. e., ophthalmoplegia interna, consequent upon a nuclear lesion in the aqueduct of Sylvius. There were occasions when the pupil would not react to accommodation while the light reflex was preserved. It is obvious that in these cases the fault lay not with the sphincter but with the musculus ciliaris; the pupil did not contract because it had lost this power, but because the accommodation was no longer functioning. In a rather extensive experience with this disease I have met with no single instance where the sphincter alone was involved; on the other hand, paralysis restricted to the ciliary muscle was not infrequent. The progress as to *restitutio ad integrum* was good in so far as the pupil was concerned.

In diseases of the spinal cord implicating the ciliospinal centre, pupillary signs are often noted. Horner's syndrome is usually present, namely, a contracted pupil, moderate ptosis, slight enophthalmos, and disturbances in the secretion of sweat and vasodilatation in the region of the face. The contracted pupil and the ptosis are due to paralysis of the dilator iridis and musculus tarsalis superior, respectively; the enophthalmos is the result of the relaxation of the musculus orbitalis, and the vasomotor and sweat disturbances are charged to an imperfect sympathetic. Horner's syndrome does not always assume such a classical picture. We may find some of these signs ill developed or absent. Horner's syndrome may direct suspicion to syringomyelia when the excavation is in the upper part of the cord and thus aid in a diagnosis that is difficult at best. A tuberculous process in the apex of the lung pressing upon the cervical sympathetic may exhibit Horner's syndrome. A cervical rib, hardly thought of in a patient complaining of weakness in the hand and forearm, may have attention drawn to it by noting a contracted pupil on the affected side. In brachial plexus palsy of the lower arm type, Horner's syndrome may supply the necessary corroborative evidence; in the upper arm type, Duchenne-Erb's paralysis, pupillary signs are absent, as the lesion is too high up. In hyperthyroidism there is a tendency for the pupils to be dilated from excessive stimulation of the sympathetic by the abundant thyroid substance; but when the thyroid gland is enlarged, the lateral lobes may press upon the cervical sympathetic and cause a contraction of the pupil from paralysis of the innervation to the dilatator iridis. Horner's syndrome may be present in aneurysm of the arteries springing from the arch of the aorta, in mediastinal tumors, diseased bronchial glands, in transverse myelitis of the upper cord and neoplasms in this locality, and in fracture of the cervicodorsal vertebræ.

Hysteria frequently simulates organic disease. The pupils will often assist in the differential diagnosis. Coma, paralysis, amaurosis appear, not rarely, in the hysterical. In true coma the pupils are contracted; in hysteria they are normal or slightly dilated, and, as a rule, respond readily in their several reactions. In genuine hemiplegia there is often inequality of the pupils, the larger pupil being homolateral with the brain lesion. In hysterical amaurosis, which is usually binocular, the pupils generally react promptly to the various tests; in actual blindness the pupils are dilated and fixed. except when the blindness is of supranuclear or cortical origin, in which case the pupils are normal.

In convulsions of organic nature or due to intoxication the pupils are widely dilated and functionless. The convulsion of the panhandler seeking alms, or of the hysteric craving sympathy, does not deceive the trained observer, who notes the normal size of the pupils and their prompt reflex to light. In syncope the pupils are wide and inactive; in the malingerer the state of the pupils betrays him.

In dementia præcox and other forms of mental aberration associated with excitement, the pupils are dilated but react to the various stimuli unless there is some complicating disease producing characteristic pupillary changes of its own.

In some cases of defective mentality and organic nervous diseases the myotonic pupillary reaction may be elicited, a phenomenon analogous to the tonic contraction of the voluntary muscles in Thomsen's disease, although there is no similarity in the pathology. The neurotonic reaction is occasionally present in nervous diseases. It is believed that the lesion causing the myotonic reaction resides in the efferent pupillary tract, while in the neurotonic reaction it is in the afferent path. The exact significance of these two reactions is not clearly understood, and requires further elucidation.

Wernicke's hemiopic pupillary reaction is familiar to every reader of medical literature. The terminology is rather confusing. We designate the reaction positive when the pupil does not react when the blind half of the retina is illuminated, while a negative reaction signifies that the pupil does react. As a matter of historical interest, priority should be credited to Haddaeus, who described this test several years before Wernicke. The test is a difficult one, and is hardly to be attempted by the general practitioner. It is used in cases of hemianopsia to determine the site of the lesion, whether ventral or dorsal to the primary optic ganglia. If the test is positive, i. e., if the pupil does not react to light, the hemianopsia is due to involvement of the optic tract anterior to the colliculus superior; if negative, i. e., if the pupil does react, the trouble lies farther back. This reaction is both direct and consensual. The most common cause is some pathological condition in the occipital cortex.

In diphtheria, after the acute symptoms are spent, we encounter, at times, pupils that do not react to accommodation, although the reflex to light is retained. The pupils do not contract when the patient is asked to accommodate, not because there is anything wrong with the sphincter iridis but because the patient does not accommodate, owing to paralysis of the musculus ciliaris.

A lesion of the third nerve, either peripheral or nuclear, or even cortical, e. g., in affections of the orbit, in hemorrhage, inflammation, or tumor of the midbrain, in abscess of the temporal lobe or in fracture of the base of the skull, will produce a paralytic mydriasis. A paralytic mydriasis may also result from direct injury to the iris itself, as in case of concussio bulbi. Iridеremia (absence of iris), either partial or complete, usually a congenital condition but sometimes due to trauma, must not be mistaken for iridoplegia.

In appendicitis and other acute abdominal conditions, when pressure is made upon the inflamed organ the pupil on the corresponding side will dilate, but no pupillary change will occur if the part is not tender—a valuable sign in those patients whose answers are misleading.

In botulism a characteristic symptom is ophthalmoplegia interna: the pupils are dilated and do not react. The sphincter is paralyzed and the accommodation is abolished. Ptosis is often associated, and some of the extrinsic ocular muscles may be involved. These eye disturbances are common in encephalitis lethargica, so much so that the latter, during the epidemic, was diagnosed as botulism, especially in Great Britain.

In cases of sudden blindness with negative ophthalmoscopic findings and normal pupils, the most likely diagnosis is uremia, both visual areas in the cortex being rendered powerless by the uremic poison. In uremic coma the pupils are contracted and practically stationary; when death impends the pupils become dilated and thus supply the physician with dependable information as to the immediate outcome.

Blindness of both eyes is accompanied by dilated pupils which are immobile to light but reacting to accommodation and sensory irritation. Very rarely in the cases is the light reflex preserved, when we must assume that the visual fibres alone have been destroyed, while the pupillary fibres have been spared. However, if the blindness is due to a bilateral supranuclear or cortical lesion the appearance and behavior of the pupils will be normal. In monolateral blindness the following pupillary phenomena are observed: When the blind eye only is illuminated, its pupil does not contract, nor will that of its fellow eye; but, upon directing light into the seeing eye, the pupil of this eye as well as that of the blind eye will contract; i. e., the blind eye does not react to direct light, nor does the good eye react consensually, but the seeing eye reacts directly and the blind eye consensually. We have here a method of differentiating between a dilated pupil due to blindness and one dilated because of paralysis of the sphincter iridis; in the latter the pupil reacts neither directly nor consensually, while the other eye is in nowise affected, contrasting thus with the conduct of the pupils when one eye is blind. In unilateral amaurosis the pupil of this eye is but slightly dilated, because its consensual contraction is not interfered with. In cataract, if there is no complication, the pupillary reflexes are not impaired, although the cataract may be so far advanced as to render the patient practically blind.

The pupils furnish important data in determining the causative factors in many of the unconscious states. In the hypnotic trance and somnambulism the pupils are dilated, in contrast to what occurs in normal unconsciousness (as in sleep). In the unconsciousness succeeding a debauch the pupils are contracted; however, if it is a wood alcohol affair, the pupils are dilated, due to the accompanying amaurosis, while in ethyl alcohol intoxication the obtunded sensorium is held accountable for the pupillary change. In carbon monoxide (coal gas) poisoning, the pupils are dilated and fixed; an indication of returning consciousness and thus of favorable prognostic significance is a resumption of pupillary activity.

The general practitioner is frequently called in by his colleagues to administer anesthesia, and should be well acquainted with the behavior of the pupils under ether and chloroform. The well contracted pupil reacting to light is the desideratum for a good anesthesia. During the anesthesia, if the pupils dilate but react to light, it signifies that the patient is not completely under, or that the splanchnic nerves are being irritated by the surgeon manipulating some abdominal viscus. If the pupils dilate but fail to react, the anesthetic should be stopped immediately, for it indicates threatening paralysis of the vital functions. In the stage of excitement the pupils are dilated but responsive.

Upon the approach of death the pupils dilate and no longer react, although the patient sees; this condition of the pupils gives to the moribund the socalled death stare. Atropine will dilate and eserine will contract the pupils in the dead for several hours, a point of medicolegal importance when there is a question as to when death occurred. When rigor mortis sets in the pupils contract.

Poisoning by the following drugs contract the pupils: Carbolic acid and its congeners, opium and its alkaloids, grain alcohol, calabar bean (physostigmine), jaborandi (pilocarpine), and the alkaloid of the poisonous mushroom (muscarine). Lethal doses of the following drugs dilate the pupils: Belladonna and its derivatives, cannabis indica, chloroform and ether, cocaine, digitalis, the nitrites and nitroglycerine, and turpentine. Belladonna and atropine, taken internally or applied as a salve, may cause mydriasis, which, however, is not so marked as when the drug is instilled into the eye. If a patient who has been taking medicine complains of dazzling and inability to read the printed page, and the examination reveals dilated and sluggishly reacting pupils, the physician should suspect the ingestion of a drug that has cycloplegic properties. Eserine (physostigmine), when prescribed to tone up the intestinal musculature, may cause pain in the eyeballs, impaired distant vision, and pinpoint pupils.

In anisocoria (unequal pupils) the question arises which is the normal pupil. The problem is solved as follows: A five per cent. solution of cocaine hydrochloride is instilled into the eye with the wider pupil. If the pupil dilates moderately, it is the normal one; if it does not dilate at all, there is a spasm of the sympathetic; if it dilates *ad maximum*, the sphincter is paralyzed. We now drop the cocaine into the other eye, i. e., the one that has the smaller pupil. If the dilatation is moderate, this pupil is the normal one; if no change occurs, there is a paralysis of the sympathetic or a spasm of the sphincter. We next put a few drops of a one per cent. solution of atropine sulphate into the same eye. If the pupil dilates much, we are dealing with a spasm of the sphincter; if the dilatation is only moderate, there is a paralysis of the sympathetic. In the latter case, a one to 1,000 adrenalin chloride solution will produce an immediate and pronounced dilation of the pupil. In spastic mydriasis, the sensory reflex is absent, but the reaction to light and accommodation is retained; eserine will contract such a pupil. Cocaine has no effect on the Argyll-Robertson pupil, but adrenalin will dilate it.

It is desirable to review briefly the action on the pupils of the more important ophthalmic drugs. Atropine and scopolamine produce the greatest dilatation of the pupils and render them absolutely immobile. Homatropine acts in a similar manner, but its action is less vigorous and less sustained. Cocaine causes a moderate dilatation of the pupils which disappears in an hour or so. Euphthalmine dilates the pupil to a greater extent than cocaine. Holocaine anesthetizes the eye, but the pupil remains unchanged. Eserine produces a maximum contraction of the pupil which lasts a few hours only. Pilocarpine has a like but less powerful effect. A pupil contracted by eserine will not dilate upon the instillation of cocaine, but will if atropine is used. On the other hand, an atropinized eye will not respond to eserine. Eserine is helpful in ascertaining the seat of a paralytic mydriasis; it causes a prompt contraction of the pupil if the lesion is nuclear; if peripheral the pupil remains dilated. Adrenalin has no action on normal pupils; however, if hyperglycemia is present, the pupils will dilate—a fact that may be utilized for diagnostic purposes.

Before attributing pupillary abnormalities to systemic disease, it is necessary to exclude all local causes. Acute affections of the cornea or iris are accompanied by a contracted pupil; in glaucoma the pupil is dilated, oval, and reacts sluggishly; when adhesions bind the iris to the cornea or lens the pupil is distorted and its activity impaired; advanced deterioration of vision from disease of the fundus oculi is associated with large pupils and slow light reflex; orbital cellulitis, or tumors, in the orbit, may press upon the ciliary ganglion or oculomotorius and be responsible for a mydriatic paralysis.

In conclusion, it may be asserted that, although normal pupils do not clothe the possessor with good health, yet abnormal pupillary phenomena, in the absence of local factors, signify systemic disturbance, usually of a grave nature.

694 Greene Avenue.

Eye Strain in Every Day Practice

By AARON BRAV, M. D.,
Philadelphia,
Ophthalmologist to the Jewish Hospital.

Clinical experience as well as the scientific study of the visual function leads us to the conclusion that the process of vision is very complicated and is associated with considerable amount of work. The normal visual organ can stand this work without any ill effect upon the human organism, but the subnormal eye, being forced to accomplish its end by an excessive amount of work, usually gives rise to symptoms which are detrimental to the wellbeing of the human organism. In its effort to see, being optically subnormal, the ametropic eye has to borrow—so to speak—nervous energy from the other organs of the body, thus indirectly and reflexly reaching the main reservoir—the central nervous system, sometimes overdrawing its own account as well as the allotted account of the other organs until, finally, it reaches bankruptcy as an inevitable result. It is this disturbed balance in the nerve supply that accounts for the various reflex symptoms that we meet so often as a result of eyestrain. It may be stated axiomatically that the human eye is rarely absolutely normal.

WHAT CONSTITUTES A NORMAL EYE?

By a normal eye, from the optical point of view, we understand a visual organ whose refractive status in a state of rest is found to be in such a condition that rays of light which enter the pupil will so converge as to come to a focus on the retina without any special effort of the mechanism of accommodation. Optically speaking, this would be the ideal visual apparatus. Strictly speaking, however, even such apparent normality is not sufficient evidence of perfection when considered from the physiological and pathological points of view. Indeed, a temporary apparent normality may be found at the transitional point when a hyperopic eye by a gradual lessening of the hypermetropia in consequence of stretching of the ocular tunics, which increases the anteroposterior diameter of the eyeball is about to be converted into a myopic eye. Such an eye, while its refractive status will be found normal when the objective as well as subjective tests are applied, must be considered from the ophthalmic point of view as abnormal. In fact, during all this time in which the refractive changes have taken place the eye was abnormal. Scientifically considered, an absolute normal eye is a rarity indeed.

Clinically, however, we do find normal eyes. By a clinically normal eye we understand an eye that has normal central and peripheral vision, which vision is obtained without any special expenditure of nerve force, and which is not accompanied by any of the known symptoms of eye strain regardless of any existing error of refraction. An eye free from symptoms of strain, local or reflex manifestations, with normal vision, is, clinically speaking, a normal eye. On the other hand, an eye that gives rise to symptoms of strain locally or reflexly is an abnormal eye that requires optical aid, even though the visual acuity on examination may be found to reach the high mark of Snellen's test card, namely 20/20.

The symptoms directly traceable to some defect in the visual apparatus are numerous, indeed. The complaints from those suffering from eye strain are manifold, of a different type and nature. In many of these cases vision is found to be normal, and the patient does not suspect at all that his eyes may be the cause of his complaints. As a matter of fact, most patients suffering from eye strain have a normal range of vision. The average myopic patient who comes to our consultation room does not come on account of asthenopic symptoms, but asks for an increase in his range of vision. There seems to be a sense of resignation on the part of the myope to a certain amount of vision, and no special effort is made to increase this amount by the mechanism of accommodation. There being no overwork or strain on the ciliary muscles and consequently no symptoms of eye strain. We usually find the asthenopic symptoms in those persons who have a normal visual acuity, but which is obtained by special overwork of the internal ocular muscles. It is this overwork that gives rise to the manifold symptoms grouped under the term of eye strain. We speak of these symptoms as accommodative asthenopia. Clinically, we often see patients suffering from eye strain in whom no errors of refraction can be found. These cases, on careful examination, show a distinct disturbance in the balance of the external ocular muscles, and we speak of these cases as heterophoric asthenopia, indicating that the causal element is not the mechanism of accommodation but the mechanism of fixation. The principle, however, is the same. There is an imbalance of the external ocular muscles which necessitates an extra amount of nerve force to bring about a proper fixation so as to avoid a manifest or latent diplopia in the interest of binocular single vision. In other words, refractive asthenopia means an overwork of the internal ocular muscles, while heterophoric asthenopia means an overwork of the external ocular muscles. In many cases both the internal as well as the external ocular muscles contribute to the symptoms complex of eye strain, in which case the symptoms are more severe.

HEADACHE.

The most frequent reflex symptom directly traceable to some ocular condition is headache. In this paper we are not concerned with the headaches that are associated with the acute inflammatory diseases of the eye, such as iritis, keratitis, glaucoma, but rather with those cases that are not inflammatory in type, and, therefore, the eye as the offending element is not suspected. And yet fully forty per cent. of the patients that consult the ophthalmologist do so on account of headache. In fact, the eye specialist is also considered a headache specialist. The headache is caused either by the strain of the accommodation in the effort to overcome errors of refraction, or results from the struggle required to maintain binocular single vision, when there is some disturbance in the equilibrium of the fixation apparatus. While the nature and type and site of the headache is not always sufficient evidence of the real cause underlying the condition, it may be stated with a fair degree of accuracy that nearly all frontal headaches and pain in the region of the superciliary ridges are usually due to some anomaly of refraction or disturbances in the ocular motility. Sometimes the headache is localized in different parts of the head, and not rarely is diffused in nature. Ocular headaches usually come on after some close application of the eyes to near work. Workers usually begin to feel the pain in the afternoon, and it stops as soon as the work is over. In some cases the headache is constant; this is due to a spasm of the muscles of accommodation. Occasionally the headache is present in the morning. This is often the case where the external ocular muscles do not act harmoniously.

It should be remembered that an existing error of refraction in cases of headache does not necessarily prove its causal relation, as there may be another causal element, the error of refraction being merely coincident. As a matter of fact, the positive proof of the causal relation from the ophthalmic view depends entirely upon the therapeutic test, which cures the condition by the wearing of properly corrected and adjusted glasses. All cases of headache should be examined and any error in refraction corrected. Ocular headache is not infrequently found in association with other local symptoms of irritation, such as redness of the lids, itching, pain in the eyeball, and lacrymation, but not rarely it is the only symptom of eye strain. Quite often the headache is accompanied by local symptoms of irritation and other reflex symptoms such as dizziness, vomiting, and vertigo.

OCULAR VERTIGO.

We use the term ocular vertigo to indicate that the vertigo is ocular in origin. It is now an established fact that a large number of patients suffering from vertigo find instantaneous relief by the correction of their optical defects. Every physician must have observed the simple fact that paralysis of one of the external ocular muscles gives rise to double vision dizziness and vertigo. It is not necessary to revolve these patients in a Bárány chair to produce the attack, and they find immediate relief by closing the paralyzed eye which disturbed the process of orientation and mechanism of equilibrium. Ocular vertigo differs in no way from vertigo caused by any other condition, except that it is more easily accessible to treatment.

Vertigo results from a disturbance in the objective and subjective orientation which interferes with our sense of security in space. Our sense of security in space depends largely upon the knowledge of the relationship of objects to one another and the relationship of our own body to the objects surrounding us. Appreciation of light, recognition of form, perception of depth, determination of dimension, are all essential to our sense of security in space. Our position in space thus largely depends upon our visuomuscular apparatus with its complicated mechanism of fixation. Whenever this mechanism is subjected to a severe struggle for the maintenance of binocular single vision, vertigo may be the possible outcome. Delusion of space, of depth, of distance, of dimension, may under certain circumstances temporarily destroy our relation to objects that surround us, interfering with our power of fixation, unbalancing our equilibrium, disturbing our objective and subjective orientation and producing vertigo. Ocular vertigo may thus be caused by: Disturbance of motility (paralysis of the external ocular muscles; spasm of the external ocular muscles), refractive anomalies (simple, compound and mixed astigmatism), accommodative spasm of the ciliary muscles; paresis of the ciliary muscles; disturbed relation between accommodation and convergence.

Not infrequently it is a combination of these causes that produces vertigo, although it may often be the result of any of the named disturbances of the ocular mechanism, refractive, accommodative, or motor.

NAUSEA AND VOMITING.

Gastrointestinal symptoms as a result of eye strain are not infrequently seen in daily practice. It is generally accepted and known to workers in the field of ophthalmology that irritability of the stomach, loss of appetite, dyspeptic symptoms after the ingestion of food, dizziness, nausea and vomiting are often caused by eye strain. Dizziness as a symptom of some ocular defect is a common occurrence. Not infrequently this is the only symptom and complaint of the patient. Usually it is seen in association with other symptoms, such as headache, nausea and vomiting. This is seen in many of the inflammatory conditions of the eye, such as iritis glaucoma, but it is also seen quite often as a result of eye strain in cases of error of refraction and muscular imbalance. This symptom occurs usually in those cases where there is a disturbance of the ocular balance without any manifest diplopia. Careful examination, however, reveals a latent diplopia and an overlapping of images. I have seen cases of persistent vomiting caused by mixed astigmatism, the vomiting ceasing after the error of refraction was corrected. Several cases of mixed astigmatism came under my observation which gave symptoms simulating grave conditions such as tumor of the brain, the symptom disappearing after the error of refraction had been corrected.

Gastrointestinal symptoms of ocular origin are commonly observed in children during the period of school life. These children usually suffer from headache, dizziness, nausea, anorexia, and vomiting, and not infrequently are behind in their work. All these cases should be carefully corrected, and should be made to wear glasses during the school term.

INSOMNIA.

That insomnia may be the result of eye strain is not generally known to the physician, and he rarely thinks of the possible connecting link between asthenopia and insomnia. And yet we have seen numerous cases cured by correcting errors of refraction. Usually these patients with insomnia have associated with other symptoms of eye strain, such as chronic headache, dizziness, difficulty in performing close work, reading, sewing, etc. I have never seen a case where the insomnia was the only symptom of ocular strain. Following the epidemic of influenza I have seen numerous cases of asthenopia among the many other symptoms, including sleeplessness, and, strange to say, these postinfluenzal cases all yielded readily to the wearing of glasses. In fact, patients would come back the day after the first visit, after having instilled several drops of atropine—and I used atropine in all these cases—stating that this was the first night for a long time that they had had refreshing sleep. The cephelalgia and insomnia in these postinfluenzal cases I attribute to a spasmodic condition of the ciliary muscles, which were at once relieved by the instillation of atropine, which temporarily paralyzed these muscles. Of course I realize that not all cases of insomnia are due to some faulty mechanism in the visual apparatus, but it is worth while bearing this possibility in mind in connection with many cases of insomnia. There is no question in my mind as to the value of glasses in such conditions, and they should always receive the attention they properly deserve.

917 Spruce Street.

The Serum Treatment of Lobar Pneumonia*

By WALTER L. NILES, M. D.,
New York,
Professor of Clinical Medicine, Cornell University Medical College; Attending Physician to Bellevue Hospital.

The following observations on the serum treatment of pneumonia apply to the lobar form only. While a number of methods of specific treatment have been employed in influenzal pneumonia, none can be said to have given good results. In bronchopneumonia the varieties of causative organisms are so numerous and exhibit such diverse immunological reactions that specific therapy is not likely to meet with success and is not generally employed.

The serum therapy of lobar pneumonia is dependent upon an exact etiological diagnosis in each individual case. In most instances this can be determined within six to eighteen hours, during which time the patient can be tested for sensitization to horse serum, and if found to be sensitive, he can be desensitized. Thus little time is lost in determining the type of infection and as a diagnosis can usually be made early in the disease, there is no good reason for administering either Type I antipneumococcic serum or a polyvalent serum before the type of infection has been ascertained. Moreover, the administration of serum frequently produces rather severe reactions which should be avoided unless benefit can reasonably be expected and no polyvalent serum yet produced has been found to possess curative properties to more than a slight degree. The only type of pneumococcus for which an effective antiserum has been developed is the Type I, and serum therapy should therefore be limited to such proved infections. In Type I pneumococcus infections, however, the mortality is so definitely lowered by the use of serum that today, with very few exceptions, no patient suffering with lobar pneumonia can be said to have been given his maximum chances for recovery unless the type of infecting organism has been determined, and if proved to be Type I pneumococcus to have received adequate doses of serum. The exceptions are: 1, young children whose intoxication is mild and the difficulty of treatment great; 2, adults first seen late in the disease, mildly intoxicated and showing improvement; 3, elderly patients.

---

*Read before the Medical Association of the Greater City of New York, February 21, 1921, and before the Queens County Medical Society, March 29, 1921.

While the mortality of Type I infections varies in different seasons, the average in untreated cases is not less than twenty-five per cent. In several series of serum treated cases the mortality has been below ten per cent. All reports have not been so favorable, but analysis of them shows that the cases have not been treated according to the present accepted standards. Among the defects noted are:

1. Insufficient doses—twenty-five to fifty c. c. are often given.
2. Infrequent doses — sometimes repeated only once in twenty-four or forty-eight hours.
3. Inaccurate typing—this of course leads to false conclusions.

It is unfortunate that no large series of cases, part serum treated and part untreated, under otherwise identical conditions, has been observed. Until this is done, the exact measure of benefit from serum therapy cannot be determined.

METHOD.

A brief description of the method of serum therapy in pneumonia is as follows:

Immediately upon making the diagnosis of lobar pneumonia a specimen of sputum is secured, and preparations for typing commenced. If no sputum can be obtained, it may be necessary to resort to a blood culture, a puncture of the lung which is without danger, or to determination of the soluble precipitins in the urine.

The patient is questioned for a history of asthma or hay fever, for such persons are more likely to be sensitive to serum, and for previous injections of antisera for diphtheria, meningitis or tetanus. A skin test for sensitiveness to horse serum is then performed. It matters little whether the scratch method or the intradermal method is employed though the latter is more sensitive and probably to be preferred. 0.02 c. c. of sterile diluted horse serum (diluted with salt solution, one to ten) is injected into the skin. A control of a like amount of sterile salt solution is injected nearby. If the test is negative, the swellings disappear within a few minutes. If, however, the patient is sensitive, an urticarial wheal develops within five to ten minutes and becomes surrounded by an area of erythema which reaches it maximum within an hour, then rapidly fades. Such reactions are rare but when obtained, the patient should be desensitized by subcutaneous injections of very small amounts of horse serum at half hour intervals, doubling the size of the dose at each injection. If, as is usually the case, no reaction occurs after one hour, one c. c. of normal horse serum is injected subcutaneously, as patients are occasionally sensitive though the cutaneous test is negative and this injection serves to desensitize them.

If the infectious agent is found to be a Type I pneumococcus, the serum is at once given and to be effective it must be given intravenously. This is easily done by a simple gravity apparatus or more easily with an apparatus similar to those used for salvarsan injections. Important points to be observed are, 1, that the serum be warmed and kept warm, so that it reaches the vein at just about body temperature; 2, the first fifteen c. c. should be injected steadily and very slowly, so that fifteen minutes is occupied for this portion. During this time, watch carefully for increase in the pulse rate, cyanosis, pallor, urticaria or difficult breathing. If any of these symptoms appear stop the injection for ten to twenty minutes, during which time they will generally cease and the injection can be resumed. Such symptoms very rarely arise, and after the first fifteen c. c. have been injected the remainder can be given more rapidly, twenty-five to thirty minutes being occupied for the entire dose.

It is absolutely essential to give large quantities of the serum, one hundred c. c. being the usual dose for the initial injection. The size and frequency of the subsequent doses must depend upon the effects of the preceding doses. They should generally be repeated every eight hours, one hundred c. c. at a dose, until the patient's temperature remains below 102° F. In the majority of cases, within an hour after the injection the temperature rises and remains elevated for two or three hours, to be followed by a marked fall—then often remaining low and convalescence being established. In others it rises again after a few hours, while in some it shows little change. These should receive repeated injections until the temperature falls and remains low. Those patients whose temperatures do not decline after several doses should be suspected of complications, particularly empyema and otitis media. Throughout the disease patients should be watched very carefully, the temperature taken every two hours day and night, and serum given promptly as the indications arise.

REACTION TYPES.

Following the injections of serum three types of reaction may develop—the anaphylactic, the thermal, and serum sickness. The anaphylactic reaction very rarely occurs under any circumstances and severe reactions can probably always be avoided by the measures previously described. It develops within fifteen minutes, usually at once, after the first introduction of serum and is manifested by intense dyspnea, restlessness, anxiety, flushing followed by cyanosis, cough, sweating and, after a few minutes, an urticarial eruption. Upon the appearance of any of these symptoms the injection should be stopped at once and, unless slight, 0.6 c. c. epinephrine or 0.5 mg. atropine sulphate, or both, should be given hypodermically. These measures quickly control the symptoms and subsequent injections seldom produce any discomfort as the first dose desensitizes the patient. While they are occasionally very severe, they can generally be prevented and the remote possibility of an occurrence of anaphylactic shock should not prevent or delay administration of serum.

The thermal reactions may occur after the first or any subsequent injection and are not harmful except possibly to elderly, sclerotic subjects. Within a half to one hour after the injection chilly sensations or a severe shaking chill, accompanied by quickened respiration and moderate cyanosis develop. The temperature rises, one, two or three degrees and then rapidly falls, sometimes to normal, and the patient perspires freely, after which he rests quietly and looks better. The temperature may remain low and convalescence may follow, or after a few hours it may again rise. If so another injection of serum should be given. Warm drinks or aromatic spirits of ammonia and heat to the extremities are grateful to the patient during the chill.

In about a third of the serum treated cases more or less severe manifestations of serum sickness develop. The symptoms are mild in most patients, but some ten per cent. are quite severe. Mild manifestations develop within a few days and consist in urticaria or erythema, slight rise in temperature and general aches and pains, which may recur at intervals for several weeks. Severe cases have higher temperatures, sometimes 103° to 105°, extensive urticaria, pain in the joints, edema of the face, neck and extremities, and glandular enlargement. These usually come on seven to fourteen days after the administration of serum and last four to seven days, though they occasionally recur several times. A dose of epinephrine temporally relieves the urticaria and aspirin alleviates the pain. Though albuminuria frequently accompanies serum sickness, no serious or permanent after effects have been observed, and its occurrence certainly should not deter one from using serum.

CONCLUSIONS.

In concluding this brief presentation on the serum therapy of pneumonia, I desire to emphasize the following:

1. An exact etiological diagnosis should be quickly made in every patient suffering with lobar pneumonia.
2. With very few exceptions Type I pneumococcus infections should be treated with Type I antipneumococcus serum.
3. The serum should be given in large doses (generally one hundred c. c.) and repeated every eight hours until the temperature falls and remains below 102°; if it subsequently rises the administration of serum should be repeated unless complications, which should always be suspected, are determined.
4. The serum treatment should be commenced as early as possible; it should reach the vein at about the body temperature and the first fifteen c. c. should be given slowly.
5. Polyvalent serum should never be given and Type I serum should be administered only to proved Type I infections.
6. The serum treatment as above outlined reduces the mortality of Type I infection more than fifty per cent.

893 Park Avenue.

The Rectal Tract as a Source of Focal Infection*

By HARRY GOLDMAN, M. D.,
New York.

While much has been written about focal infection with various parts of the body as a starting point, the lower intestinal tract, though frequently mentioned, has been lightly passed over. In private practice and in my clinic at the Hospital for Joint Diseases, case after case of infectious arthritis has been observed where the focus of infection proved to be in the terminal gut.

Just a few words in review of the subject of focal infection with reference to the rectal tract. Billings (1) defines a focus of infection as a circumscribed area of tissue infected with pathogenic organisms, usually located in tissues communicating with a mucous or cutaneous surface, and well supplied with blood vessels and lymph channels. The focus is not only the point of entrance of the bacteria or their toxins, but also the place where the organisms acquire the peculiar property necessary to infect. It has been proved that the colon bacillus only becomes pathogenic in the intestinal tract where there is a break in the continuity of the mucous membrane and in the presence of mixed infection. In cases where I was able to obtain cultures from the focus, while the gram negative colon bacillus was evident, other bacteria were also present in varying numbers. The number of bacteria, however, in some acute lesions, is sometimes so small as to be difficult to isolate, and suggests that the specific lesion is due in part to the formation of toxins. Removal of a focus, such as an ulcerated hemorrhoid, fistula or anal ulcer, is followed by improvement in the general health and frequently by a cure of a distant lesion, providing the changes are not too far advanced. If elimination of a visible focus does not clear up the distant lesion, it is advisable to look for secondary foci. Exacerbation of local or systemic symptoms, immediately following the removal of a focus of infection, usually indicates that we have attacked the primary cause, and a good result may be expected. According to Rosenow (2), a focus in the intestinal tract, which for mechanical reasons can neither drain nor heal, that is teeming with microorganisms, should be regarded as a test tube with permeable walls, imbedded in the tissues, where absorptive channels for bacteria and their products are present.

The terminal gut, anatomically divided into pelvic colon, rectum and anal canal, constitute the normal receptacles and passage for the stool. The pelvic or sigmoid colon is the major receptacle for the fecal matter. The rectosigmoid, the narrowest part of the large intestine, consisting of the terminal two inches of the pelvic colon and proximal one and five tenths inches of the rectum, is a definite apparatus which retards the fecal current and prevents continuous progress of the intestinal contents into the rectum. With the exception of the pyloric end of the stomach and the first portion of the duodenum, the rectosigmoid is more frequently diseased than any corresponding portion of the gastrointestinal tract (4).

---

*Read before the Clinical Society of the Hospital for Joint Diseases, December 14, 1920.

When, by reason of continued error in diet, prolapse into pelvis, as in enteroptosis or adhesions following pelvic inflammation or operation, stasis takes place, the feces become hard and scybalous, peristalsis causing friction between the ball like masses and the mucous membrane producing ulceration with symptoms of constipation alternating at times with diarrhea, the stools containing pus, blood and mucus. Sigmoidoscopy reveals many large or small ulcerations.

Case I.—Mrs. M. L., seamstress, aged thirty-nine, widow, three children, baby three years old. The previous history was negative. Since the birth of the baby the patient has been obstinately constipated, necessitating frequent resort to cathartics. Recently she began to have recurrent attacks of loose bowels containing blood, and she had such severe pain in her feet that she was compelled to discontinue her work at the sewing machine.

Sigmoidoscopy showed the terminal sigmoid and upper rectum studded with fairly large ulcerations. Straining caused scybalæ to present in view of sigmoidoscope. Both feet were tender to pressure. The x ray report showed the pelvic colon ptosed and fixed in the pelvis. Examination of the feces showed pus, blood and mucus. The urine was negative. A diagnosis of infectious arthritis of the tarsometatarsal joints of both feet following ulcerative coloproctitis was made. Shortly after the colonic irrigations were started, the pain in her feet diminished, gradually disappeared, and in a few weeks she was able to resume occupation. The rectum, protected by the sigmoid mechanism above and the sphincter apparatus of the anal canal below, is provided with the valves of Houston, folds of the rectal wall which normally support the fecal column, but when hypertrophied they act as an impediment to the expulsion of the stool, the retention of which causes symptoms similar to the above. Proctoscopy shows hypertrophied valve or valves, removal of which usually reveals ulceration above the obstruction.

Case II.—Mr. W. F., driver, aged forty, married. Had always been more or less constipated, but in last few years had been only able to have movement when the stool was soft. The patient suffered much from constipation. Took cathartics and enemas frequently. Always has an unsatisfactory movement, and feels as though some was left. Returns to the toilet and usually has a second movement, which is bloody. For the past few weeks he has suffered severe pain in right shoulder and knee, for which he came to Hospital for Joint Diseases.

Proctoscopy showed a marked hypertrophy of the lower left Houston's valve, almost occluding the calibre of the rectum. Passing the instrument above and pushing the valve back revealed two fairly large ulcerations. The shoulder and knee were tender to pressure or movement. Diagnosis was made of an infectious arthritis of the right shoulder and knee following ulcerative proctitis, due to a hypertrophied rectal valve.

After cutting through the valve with a valve clamp, local treatment was applied to the ulcerations, which healed rapidly. The constipation due to mechanical obstruction was almost immediately relieved. There was no desire to return to the toilet after movement. The pain in the shoulder and knee gradually disappeared, and in about six weeks the patient was entirely well.

The rectum is abundantly supplied with veins. The superior hemorrhoidals having no valves favor venous engorgement, and this is one of the underlying factors in the etiology of internal hemorrhoids (4). These are prone to ulcerate and become a suitable field for infection.

Case III.—Mr. O. A. M., chauffeur, aged forty-two, married. Referred by Dr. H. W. Frauenthal. No previous history of serious illness or injury. The patient had had pain in the right shoulder for the last six months, which had become so severe as to force him to discontinue driving. At about the same time that the pain in the shoulder started, he noticed a protrusion from the rectum after each movement, which was accompanied by bleeding. Rectal examination disclosed a cluster of ulcerated, bleeding hemorrhoids. X ray examination of the shoulder showed a slight lipping of the glenoid margin. Diagnosis of infectious arthritis of the right shoulder following ulceration of internal hemorrhoids was made. Hemorrhoidectomy under novocain anesthesia was performed. For forty-eight hours following operation the pain in the shoulder was much increased, then gradually diminished, and in three weeks the patient was entirely free from pain and able to return to his former occupation.

The anal canal of Symington acts as a passageway for the fecal mass, and also has the power to control and postpone the act of defecation until the proper moment. It is the only portion of the intestinal tract that is always normally empty. At the junction of the rectal mucous membrane with the anal skin, the lining membrane is gathered in vertical folds connected by little arches of skin and mucous membrane forming the crypts of Morgagni. These may retain small pieces of hardened feces or foreign body and give rise to ulcerations or suppuration and perforation into the perirectal fat with the formation of abscess and fistula.

Case IV.—Mr. J. C., janitor, aged fifty-five, married. The past history was negative except for chronic constipation. Three months before registering at the clinic for treatment, after an attack of influenza, the patient began to have pain in his rectum following bowel movements. This gradually became more severe and followed by frequency of urination, which made him miserable and prevented him from sleeping or obtaining rest. About a week later pain developed in the right shoulder, which became so severe that he was unable to lift his arm from his side.

Through the anoscope I was able to discover a large ulcer on the anterior surface of the anal canal, accounting for the pain after bowel movements and also the reflex bladder symptoms. Uranalysis was negative. I was unable to raise the patient's arm without apparently causing him intense suffering. A diagnosis of infectious arthritis of the right shoulder following anal ulceration was made. As soon as local treatment was applied, the vesicle symptoms disappeared, the pain after stool was diminished and the shoulder began to show improvement. Six weeks after starting treatment the patient was able to return to work.

CASE IV.—Mr. A. T., hat manufacturer, aged forty, married. Referred by Dr. A. Pollak. There was no previous history of severe illness or injury. The patient was habitually constipated, for which he frequently took enemas. About three weeks before coming to the office he began to have an uncomfortable feeling in the rectum before and after movements. Two weeks after the onset he noticed a painful swelling in the perianal region, which was followed by a discharge of pus from the rectum, and at the same time he began to have pain in both feet. Perianal examination revealed a moderately large fluctuating mass about two inches to the left of the anal margin. There was no external opening. Both feet were tender to pressure.

A diagnosis of infectious arthritis of the tarsometatarsal joints of both feet following an ischiorectal abscess and fistula was made.

The abscess was incised, the fistulous tract excised and the wound packed. Five weeks after the operation the wound had entirely healed, and the pain in the feet had disappeared.

These cases are a few typical examples selected from a fairly large series where the focus of infection proved to be in the lower intestinal tract. I have avoided cases with backache so as not to confuse the cases of focal infection with those where a question of reflex pain might arise. At no time was any treatment applied to the infected joints.

REFERENCES.

1. BILLINGS, F.: *Lane Medical Lectures,* D. Appleton Company.
2. ROSENOW, E. C.: *Journal of Dental Research,* vol. i, No. 3, September 19, 1920.
3. MAYO, W. J.: Study of Rectosigmoid, *Surgery, Gynecology, and Obstetrics,* December 17, 1920, p. 616.
4. COOKE, A. B.: *Diseases of Rectum and Anus,* second edition, p. 24.

226 WEST SEVENTY-SECOND STREET.

Hay Fever

A Preliminary Report on a Successful Method of Treatment

By GEORGE L. RENAUD, M. D.,
Detroit, Mich.

Although the recognition of hay fever as a definite disease by John Bostock dates from the year 1819, it still remains one of the baffling problems of medical science. Since that time we have learned much concerning the nature of the disease, mainly due to the recognition of pollen as its exciting cause, and as a result have made considerable progress in late years, both in prophylaxis and relief of a certain number of cases. However, these measures not being curative, this is far from satisfactory, and it is in hopes of presenting a method of treatment which may eventually prove a solution of the problem, that this paper is presented. I will not discuss the many theories advanced as to the etiology of hay fever, further than to acknowledge that pollen is the exciting cause in all seasonal cases, and to state that the bacterial theory formerly advanced, is the basis of my work.

It is generally asserted that since hay fever is not an infectious disease, but rather a state of hypersensitiveness to pollens, it is impossible to produce a true immunity to it. If the premises in this assertion were correct, the conclusion might be justified. Why, however, it might be asked, this hypersensitiveness? Should not the fact, that the same pollen exist in the atmosphere for the hundred or hundreds of immune, lead us to search the individual for the true explanation, rather than the ordinarily harmless pollen? It is not probable that the hypersensitiveness of the patient is due rather to some alteration in his body chemistry that weakens his resistance to the particular pollen protein? Such a condition, I believe, exists, and is due to certain bacteria and the absorption or imperfect elimination of toxins. Basing my treatment on this theory, I have not had recourse to the use of pollen extracts at all, but have attempted to detoxicate the patient as completely as possible. While this is impossible to accomplish completely, this aim can be attained for practical purposes.

To be successful, it is necessary that the nasal, postnasal, and tonsillar regions receive attention, and I hope to be able to present before long methods that will accomplish this. As yet, I have given little attention to the accessory sinuses, the teeth, the gastrointestinal tract or other sources of infection. I feel sure that these parts could always receive attention to advantage, and, in occasional cases, will absolutely require treatment. At present, I have given no attention to the type of bacteria, nor to the determination of the particular pollen which may be the exciting cause in an individual case. I have purposely avoided doing so, so as to be able to more accurately determine the value of this method of treatment.

Working on this hypothesis, I have secured results which I consider far superior to any other method yet employed, both as to the marked relief conferred, and also to the much more important result, the attainment of a cure instead of palliation. These opinions are based on an experience in the past two years in forty-five cases. Of this number, the majority came for treatment during the hay fever season, a few had a short preseasonal course of treatment, and two or three, a few treatments spread over a considerable period earlier in the year. The results are classified as satisfactory and unsatisfactory. By satisfactory, I mean cases which were controlled completely, or at least to such an extent that they suffered decidedly less, the disease being comparatively or only slightly annoying, and not sufficient to incapacitate the patient from work or rest, and of short duration only. Forty-two of the forty-five cases came under this classification, being ninety-three per cent. of the whole, and of this number all but four or five were either free of the disease or the disease was quickly and almost completely controlled. Of the three cases classified as unsatisfactory, one was controlled for a time and then suffered severely. This patient was extremely nervous, and at no time was able to take proper treatment. Of the other two, after three or four treatments, with apparent benefit, they became dissatisfied and I heard no more from them. I realize that the assertions made are so unusual that they may be accepted with scepticism, and I append a list of cases with exact reports as given to me on each visit, so that you may more accurately determine the measure of success attained. I have not selected the most favorable, but have included all the most obstinate of the cases classified as satisfactory.

Case I.—Miss E., aged fourteen, consulted me June 17, 1920. She had had a severe rose cold for the past five years. Sneezed a great deal, eyes itched severely. The tonsils were thoroughly removed several years ago. On June 19th she reported no improvement; June 21st, complete relief since last treatment; June 28th, complete relief until this day, when she began sneezing a great deal; June 30th, there was no trouble since the last treatment; July 24th, there was no further trouble and discontinued treatment.

Case II.—Mr. B., aged forty-four, consulted me August 6, 1920. Severe hay fever for past fourteen years. Tonsils somewhat diseased, and somewhat enlarged, slightly deviated septum. Attacks began August 15th. The patient was of a nervous temperament. Had suffered from acidity of stomach, attended at times by pyorrhea, also constipation. Treated August 6th, 7th, 9th, 11th, 16th; no trouble to date. On August 18th there was a slight running of the nose. On August 20th he reported that he was all right since last treatment. Usually miserable at this time of year and left for a ten day vacation. Usually suffered while away. On August 30th he returned. He had had no trouble while away, slight symptoms only on his return. His nose was quite clear. On September 3rd he had had little trouble and little sneezing. On September 7th he reported that he was feeling fine and had had little trouble. On September 8th there were no symptoms. He was feeling fine except that he had an abscess at the root of a tooth which was opened.

Case III.—Miss M., aged fifteen, consulted me July 15, 1920. Severe June cold every year since babyhood. The middle turbinates pressed by the septum, tonsils hypertrophied. The attacks lasted until about August 20th. The patient was nervous and the treatment mild. On July 17th there was no improvement. On July 30th reported in good health. On August 9th she received her first treatment for the past ten days. Some sneezing in mornings two or three days prior to this. On August 13th reported little trouble, and ceased treatment.

Case IV.—Miss M., aged fourteen, consulted me July 6, 1920. Complained of severe cold for past five or six weeks. Sneezed a great deal, eyes itched, etc. Tonsils removed several years ago. July 9th, there was no trouble since last treatment. On July 15th she was a little worse and was given more vigorous treatment. On August 16th she reported no trouble for the past two or three weeks and treatment was discontinued.

Case V.—Male, aged thirty-nine, consulted me August 6, 1920. Has had hay fever for the past three years, which begins about the middle of July. On August 19th for first time slight symptoms occurred for about two hours in the morning; disappeared on the 20th. On August 24th slight trouble in the morning. September 13th (week's intermission) nose runs and patient sneezes considerably today for first time since last treatment. September 24th some trouble for one day only. No further trouble occurred.

Case VI.—Male, aged thirty-eight, consulted me July 21, 1920. Has had hay fever very severely for past twenty-eight years, which begins about August 15th. Irritable on hot summer days for weeks previous. Had successful submucous resection about seven or eight years ago. Tonsils slightly submerged; diseased. August 13th to 16th, felt well. August 20th, had slight trouble in the morning. He had sneezed somewhat, and eyes were a little itchy; the nose was perfectly free, however, and he had no trouble breathing at night. He went through the season with only slight symptoms.

Case VII.—Male, aged forty-three, consulted me August 3, 1920. Has had hay fever for past twenty years, and cannot sleep at night because of asthmatic symptoms, which begin about August 20th. He was treated August 4th, 6th, 9th and 17th. No trouble; feels fine. August 20th there were hay fever symptoms all day yesterday, but none today. August 23rd, there were slight symptoms yesterday and this morning, which cleared up in the afternoon. August 25th, no sneezing. The nose is somewhat congested, though easily cleared; sleeps well, and is working. August 27th, some hay fever yesterday; feels well today; there is some discharge from nose. August 31st, symptoms yesterday for the first time as in former years, but is quite comfortable today. September 3rd, quite comfortable today, very little sneezing and running; nose somewhat blocked; no asthma as yet; eyes in good condition. September 6th, very comfortable, except for a little wheezing last night. Head clears up easily. September 8th, very few hay fever symptoms; nose is blocked a great deal, and he found it difficult to rest last night. September 10th, nose freer, breathes better. Very few hay fever symptoms and very little asthma. September 14th, no further trouble.

CASE VIII.—Female, aged thirty-eight, consulted me August 30, 1920. Has had hay fever as long as she can remember, which begins about August 15th. It was not serious until three or four days ago, but is now very bad. Tonsils were removed several years ago. September 1st, very little trouble since last treatment. September 3rd, continued to improve. September 5th, eyes a little itchy, otherwise very well. September 8th, no symptoms since last treatment. September 11th, slight return of symptoms today; thorough treatment was given. September 15th, very little trouble. September 18th, slight symptoms yesterday. September 22nd, well since last treatment. No further trouble was reported.

CASE IX.—Male, aged forty-seven, consulted me June 29, 1920. He has suffered severely from hay fever for twenty-eight years; asthmatic symptoms are very pronounced during hay fever season. He has also had rose cold for about eight or ten years. Has had a great amount of treatment of all kinds without benefit. Inferior and middle turbinates are very hypertrophied. July 16th he reported that he was much better. Removed anterior portion of both middle turbinates. August 13th, feeling well. August 17th, mild symptoms yesterday which passed away in the afternoon; is feeling well today. August 20th, some symptoms this morning, which passed away at about 11 a. m. August 24th, occasional spells lasting about one or two hours, which cleared up. August 30th (6 days), has felt fairly well for two or three days, but symptoms have become more pronounced for past two or three days. September 1st, severe symptoms yesterday, about average condition of other years; well today. Nose perfectly clear, throat in good condition. September 3rd, very little trouble. September 7th, slight nasal symptoms. September 10th, fine condition, practically no trouble; nasal passages continue free, and no asthma has developed. September 13th, no trouble to speak of. Slight sneezing this morning, which passed away. No further trouble.

CASE X.—Female, aged thirty-nine, consulted me June 7, 1920. Has suffered severely from hay fever for many years. Septum slightly deviated to right, tonsils enlarged and somewhat affected. Removed anterior portion of middle turbinates on right side. August 10th, reports physical improvement. Can go into garden for first time in years, at this time of year. In August, left for trip East. I received a letter saying that patient autos around streets of Boston like other people, and is wild with joy. On September 10th the patient returned; has been autoing and riding on trains for several days past, and has had some comparatively mild trouble for past few days. On September 13th, patient reports little trouble since last treatment; she continued to attend church, lectures, etc., with only slight discomfort.

CASE XI.—Male, aged thirty, consulted me August 19, 1920. Has had hay fever for several years past, which usually starts on August 12th. This year attack began on August 18th. On August 20th much better; sneezed only a few times this morning. In the course of the next three weeks went to Philadelphia for five or six days on business, and later attended fair grounds daily for several days with only slight trouble.

CASE XII.—Female, aged twenty-four, consulted me August 27, 1920. Has had hay fever for the past seven or eight years, which comes on about August 13th and is quite severe, the patient being almost prostrated. Examination shows left side of nose tightly congested. From August 30th the patient's condition improved steadily until September 4th, when there was temporary recurrence on the left side. On September 7th the left side looked congested, and the turbinate was cut. On September 8th, no hay fever symptoms, but the left side was congested. September 10th, patient has been well since last treatment, and has been breathing through both nostrils. September 13th, patient feels well; the left side of nose is very free now. September 15th, patient feels quite well, but right side of nose is somewhat congested. September 20th (five days), free from trouble since last treatment, but today nose is somewhat stopped up on left side. September 24th, patient reports no further trouble.

CASE XIII.—Male, aged twelve, consulted me August 24, 1920. Has had hay fever for the past four or five years. Nose is congested, patient sneezes a great deal, eyes are red and itch. Tonsils were thoroughly removed four or five years ago. August 27th, patient has had hardly any sneezing since last treatment. The nose was obstructed last night. The left side is congested today, but clears up easily. On August 29th there was slight trouble, which rapidly cleared up. Patient reports no further trouble.

CASE XIV.—Male, aged twelve, consulted me September 7, 1920, for severe hay fever. Eyes were very red and extremely sensitive to light. On September 10th, eyes were almost entirely cleared up and hay fever symptoms decidedly modified. Improvement was steady, and on September 29th patient reported in good health.

CASE XV.—Female, aged thirty-four, consulted me September 15, 1920. Has had hay fever for the past fifteen years. Eyes are very troublesome. Patient cannot sleep at night, and takes sedatives. On September 17th, patient reported great improvement; very much better in every way; she has had two nights' sleep without medicine. On September 19th she reported some sneezing yesterday, but feels quite well today. On September 24th, patient reports no further trouble, and has continued well.

CASE XVI.—Female, aged twenty, consulted me September 24, 1920. Has suffered severely from hay fever for several years past. Patient was treated during height of attack last season with complete relief after two or three treatments. Patient was expected to take preliminary treatment, and reports for first time today. She says that she has been home for past two weeks, and has had very little trouble before or since return, but will take a few treatments as further precaution.

CASE XVII.—Female, aged twenty-two, consulted me January 3, 1920. Has had hay fever for past four years. Gave about a dozen treatments in following five months. Reported today, September 21, 1920, for slight head cold, and says hay fever did not come on at all.

PERENNIAL HAY FEVER.

CASE XVIII.—Male, aged thirty-eight, consulted me during the summer of 1918 for eye trouble. I had treated this patient formerly for annoying daily sneezing spells, without success. Now advised patient to submit to further treatment. This was carried out for a few weeks with complete success, and patient has never been troubled since.

CASE XIX.—H., male, aged fourteen, consulted me October 25, 1920. Has been troubled from infancy with daily sneezing spells. Has had considerable treatment, including removal of tonsils. After a few weeks' treatment the symptoms entirely abated and he has continued free since.

I have appended two cases of perennial hay fever which responded completely and quickly to treatment, as did several others, including one case (the only one I have had) of severe horse asthma. It is my belief that a large percentage of anaphylactic conditions are of bacterial origin.

I believe it will be admitted that these results are most unusual and gratifying. Apparently, nearly all cases of hay fever can remain at home with the assurance that they will suffer as little and usually less than if they went away, and with the advantage of approaching at the same time a condition of immunity to the disease. My own efforts in the future, in addition to developing the present methods of treatment, will be to determine, if possible, the type of bacteria mainly responsible for the condition, the pollen which is the exciting cause of the disturbance in the individual, and the existence of any constant relation which may exist between the two. I believe, also, that it will be possible in time, after the exciting pollen is determined, to foretell, after a course of treatment given at any time during the year, whether the individual is desensitized and consequently when immunity can be expected. If autogenous vaccines possess merit over stock ones, it may be possible to prepare vaccines much more effective than have yet been used. Naturally, any other measures or methods of treatment which have proved helpful could be utilized to advantage and should prove still further beneficial.

I do not expect to use pollen extracts as a curative measure, and believe that they will ultimately play a minor rôle in hay fever therapy. As stated above, however, in many cases they should serve a useful rôle in determining when the treatment has succeeded in producing the desensitization necessary for immunity and cure.

CONCLUSIONS.

Hay fever is essentially of bacterial origin.

It is easily controlled in practically all cases, and I believe will prove to be curable in nearly the same proportion.

The Lure of Cathartic Giving

By J. CHRISTOPHER O'DAY, M. D., F. A. C. S.,
Honolulu, Hawaii.

It is my opinion that the prescribing of cathartics will, sooner or later, come to be regarded as a vile habit that time, custom and tradition have fastened on the medical profession. The history of medicine abounds with the records of various medicaments that have come and gone as remedies. A few only endured for long. Those that have endured, endured because of a capability to produce some definite action on the human organism. Cathartics had such an action. An action so definite that it could always be depended upon with unfailing regularity. The action of such drugs as cathartics naturally begot the notion that they were capable of rendering clean (?) the gastrointesinal tract, and, once made clean in this way, it was fully prepared for whatever medication there was to follow. This very reasoning, of itself, could do less than to have led the practice into an habitual custom.

The ease with which one may err when summing conclusions into a diagnosis must have been the ground for the belief that many diseases are aborted by a brisk purge. With no one of us willing to face the odium that selfcondemnation was likely to invite, it was natural that such belief crept from the medical into the lay mind.

Medical practitioners are familiar with being told that a cathartic had been administered at the initial onset of the malady, and, while good results followed so far as bowel motions were concerned, the distress increased in severity.

There is another phase of the psychology of cathartic giving. I am thinking of the loyalty of medical minds toward all drugs possessing definite action, such as opium and its salts to relieve pain, digitalis to calm down an excited heart in waning compensations, mercury, arsenic, and the iodides, chloroform and ether, the various local anesthetics; in fact, all with similar definite action were, in a measure, responsible for the admission of cathartics because definite action could also be claimed for them.

Going back into the history of medicine for the purpose of finding the origin of administering drugs that would produce catharsis, much rare humor is encountered.

In the Middle Ages exorcism was universally practised. The result of such practice not always being satisfactory to the exorcist, his power to cure ills was seemingly limited. Then it was that he confused the issue by stating that some maladies are caused by devils while others are chastisements from God. With this teaching came the assumption that in the latter case exorcisms would be an insult to the Almighty who, to show his disapproval, was likely to give the malady a turn for the worse. Differential diagnosis as to etiology then became necessary. But when petitions and exorcisms combined gave no better result, and the attempt at differentiating between God and the devil as to initial cause, proved equally bootless, the argument once again reverted to his Satanic Majesty having taken possession. It was then advocated to attack him through his pride, for didn't the Sacred Scripture teach that Satan's main characteristic was pride? It was his pride that led him to rebel; for the same pride he was cast down.

In his commendable work, White (1) recounts, in part, how exorcisms filled hundreds of pages with the vilest epithets the worst imaginations could invent. These vile epithets, chanted as a litany, were believed to so humble the pride of the offending devil that he would tarry no longer. But all this proved of limited therapeutic value, and in what was nothing less than maddening disappointment, filth producing and rank smelling drugs were added to the formula. Thus it was hoped that an environment too disgusting for one so proud might be created.

Cathartics had their origin in myth, superstition and ignorance. Nowhere in medical history has endorsement of their use been sustained by scientific procedure. In a community where a patient has died from intestinal obstruction the notion is soon abroad that the tragedy resulted because of the doctor's inability to get the bowels to move. Even today the criticism, "Why did he not give quicksilver?" may be heard.

A recent paper by my former colleague, Robert C. Coffey, before the Medical Club of Portland, Oregon, dealing with the deadly effect of catharsis in intestinal obstruction, the fact that such treatment robs the unfortunate victim of the best surgery has to offer, was well emphasized. The paper was closed with the plea that the general practitioner, when confronted with even a suspicion of obstruction, should limit his efforts to the stomach and rectal tube only.

A typhoid infection is always manifestly more toxic when accompanied with diarrhea. No one will dispute that fact, and yet we have administered a cathartic as a cure (?) for an existing diarrhea—and this in the face of a willing admission that it is the dysenteries that tax the skill of the best.

Coming to the indiscriminate prescribing of laxatives and cathartics for the correction of constipation betrays a lack of interest, if not understanding, in what is meant by gastrointestinal motility. Gastrointestinal motility is as variant as are the types of humanity. It bears a relation to the temperament, build, occupation, habits and aims of the individual. Any notion to the contrary cannot be confirmed without resorting to such artificial means as will induce a motility in keeping with the individual's preconception.

The rule established by Coffey is a good one. It is the gist of the whole argument, to wit: "If no obstruction of the intestinal lumen be present, there is nothing to fear; if, on the other hand, such an obstruction exists, the giving of a cathartic will so promote the absorption of the accumulated proximal toxins that the safe harbor of surgery may never be reached."

If administering a cathartic is a necessary measure preparatory to performing a surgical operation, why do the unprepared emergency cases do so well? Indeed, this question has often been asked. Custom, habit and professional tradition forestall the answer.

A large dose of magnesium sulphate or castor oil given the night before is a part of the preparatory routine practised by the majority of our hospitals. Need the effect be reiterated? Crampy pains throughout prevents what in all reason should be a night of restful slumber; a sicker patient goes to operation; a nauseated patient for hours following the operation. Then those "gas pains"—that is, the patient is told they are gas pains and to be content. In a few days he begins to feel better, when he is again given a cathartic and the vicious circle is once more reestablished.

Should five or seven days find him complaining of pain within the field of incision with a rise in temperature, the uncovered stitch (?) abscess immediately becomes a warrant with which the technic of the operating room may be questioned. That the cathartic prescribed as a preparatory unit could in any way be responsible for the infection is never so much as suspected.

So long as the medical profession adheres to its traditional belief that the inducing of a transitory diarrhea is a prerequisite to the treatment of diseases, just so long will it be the cause of more ills than is becoming a science whose right to exist is recognized more on the prevention than the cure of those maladies to which the human animal is heir. There are those, no doubt, to whom this statement may seem startling, aye, even untrue, and in the face of what our medical schools teach, reasonably so; but, reviewing our experiments, together with five continuous years of surgical practice wherein cathartics were excluded, I can do no less than crave forbearance while recounting, as briefly as possible, the findings on which my conclusions are based.

Moynihan admits that many of the problems connected with the surgery of the stomach and intestines depend for their elucidation upon a knowledge of the bacteriology of the alimentary canal. "This subject," he says, "is one in sore need of further investigation."

Billroth was the first to show that the content of the bowels of the newborn is sterile. Popoff confirmed this, and showed that the appearance of bacteria in the stool depends upon the time at which the first nourishment was taken. Escherin demonstrated that the Bacillus coli is a natural inhabitant of the human intestine throughout life. Nuttall and Thierfelder by animal experimentation showed that microorganisms within the gastrointestinal canal are not necessary to the health of the animal.

Of the organisms found in the intestinal contents, Moynihan describes two varieties, namely, the permanent and the transient; the Bacillus coli representing the permanent, while the transient includes any that may be introduced into the intestinal canal by the food. The work of Gillespie and Miller must remain as an infallible guide to those striving for the best results obtainable in the surgery of the gastrointestinal mechanism. Their work has proved that the fate of bacteria introduced into the gastrointestinal canal depends entirely upon the medium of introduction and the stomach's secretion of hydrochloric acid. Food and drink are the two media through which microorganisms are introduced into the stomach, and their stay will depend upon the fluidity of the meal, together with the condition of the stomach itself, for they have observed that there is a steady decrease in the number of bacteria as digestion proceeds, and in proportion to the degree of acidity obtained. If, by the exclusion of fluids the ingesta can be delayed from eight to nine hours with a stomach of normal acid secretion, but few of the bacteria will survive.

Harvey Cushing confirmed the foregoing with experiments in the presence of a jejunal fistula. Milk recovered within a few minutes of its ingestation from the jejunal fistula was found to be unchanged in its bacteriological features. Commenting on this Moynihan says, "The importance of the physical characters of the food is therefore considerable. If the ingesta be fluid, they are passed rapidly onward into the duodenum, and are but little, if at all, altered by transit through the stomach. If the food be solid, it will remain, perhaps for hours, in the stomach subject throughout this time to the action of the gastric juice, and when passed into the duodenum will have the number of its bacteria greatly reduced."

Reviewing the work briefly referred to in the foregoing pragraphs together with a study of the accompanying diagram of Gilbert and Domenici, it becomes immediately obvious that bacteria are, in varying numbers, always present throughout the gastrointestinal tract. The question may then be advanced as to whether or no such bacteria are capable of finding their way into the chyle, lymph and blood streams and if so what conditions are most favorable to their transmigration? This last question can be answered with one word, irritation. If now we recall that which we have been taught, to wit, "All cathartics produce their result by their irritating effect upon the gastrointestinal mucous membrance." This should give this answer its true and fullest meaning.

In discussing the evils of the Brunonian doctrine, Schnel, addressing the Indiana State Medical Society said, "This method killed more people than the wars of Napoleon and the French Revolution combined, for the unfortunate victim was vomited, purged and bled till he sank into the eternal rest of the grave." Just why the profession of today insists on adhering to the last leg of the old Brunonian tripod, and with an unyielding faith in its possessing virtue, has no explanation unless it be our fear to brook the criticism that might be imposed should we express a doubt concerning a remedy or a drug that the inevitable commerce of our medical organizations has fastened upon us.

Not one of us but knows how our skill is challenged when called upon to cope with such enteric disorders that are characterized by obstinate diarrheas. We are familiar with the severe degree of toxemia and the high mortality of those diseases. We know, too, that where no intestinal obstruction exists, constipation of itself has never so much as approached a grave condition. It has never been demonstrated that cathartics are capable of cutting short, much less aborting any disease. The logic, then, of administering a drug whose action, for a time, is that of imitating diseases we dread to encounter is, to say the least, obscure.

Concerning the manner in which the chyle passes from the lumen of the intestine into the lacteals was the means of much speculation till the work of Watney, under the direction of E. Klein, demonstrated that the globules of chyle pursue the following course: First, they enter the interstitial substance between the columnar epithelial cells from where they pass into the continuous basement membrane; second, from the basement membrane they pass into the continuous interstitial substance of the villus and finally into the stomatæ between the endothelial plates and thence into the lacteals and lymph channels. While the physical properties of the interstitial substance between the columnar epithelial cells is not exactly known, its function is apparent, i. e., the sentry through which none but the globules of chyle may pass.

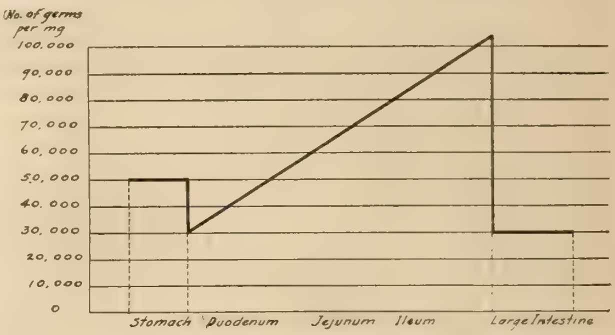


FIG. 1.—Gilbert and Domenici's diagram showing the relative number of bacteria present in the contents of different parts of the alimentary tract.

The dogs were killed three hours after a meal of bread and meat. Examination of the intestinal contents at this stage of digestion showed an abundance of organisms in the stomach, a pronounced diminution in number at the duodenum, followed by a gradual rise to the ileocecal valve, where bacteria flourished in the greatest luxuriance. When the large intestine is reached there is marked falling off in the number, with a slight rise proportionate to the distance from the cecum. (Harvey Cushing).

Owing to the free anastomoses of lacteals and mesenteric lymph vessels, the chyle becomes diluted before reaching the thoracic duct. Here it is we catch the clue that the other fluids are taken up by those lymph stalks that open within the centres of the villi. Before the thoracic duct is reached, however, this admixture is filtered through many mesenteric glands or lymph nodes.

From the foregoing arrangement can we do less than reason that the Creator must have foreseen the likelihood of infective organisms gaining access to the chyle and lymph streams? And if the interposition of mesenteric glands or nodes was necessary is it not a step further in fair reasoning to ascribe the function of sentry to the interstitial substance that occupies the intercellular spaces?

And can we expect less than an impairment of a function with so delicate a mechanism should its environment be made to suffer an unusual or foreign irritation?

The belief is general that bacteremia comes only as a secondary infection after the barriers of the focus have been broken through. This holds true with the bacteria that may be in transit within the gastrointestinal tube, should an irritant be present, with the probable exception that such bacteria have been rendered less virulent by the action of the digestive secretions.

In two hundred experiments, representing a hundred individuals, the blood specimen taken before the cathartic was administered was used as the control, and of these controls not one developed a culture, while sixty-two of the specimens out of the hundred, taken after the purge had been given, showed a decided colony of microorganisms. This bacteremia endured for about twenty hours.

The technic was as follows: Under the usual aseptic precautions blood was drawn from a prominent vein into an ordinary hypodermic syringe. Two or three drops of this blood was expelled into a tube containing either agar agar or bouillon. When the agar agar was used it was heated sufficiently for liquefaction. The tube was then shaken and placed in an incubating temperature of 37.5° C. Streptococci were the organisms whose recovery was pronounced in all of the positive cultures. Occasionally typical groups of staphylococci were demonstrated, and once in a while strange looking diplococci were observed.

There is a belief that surgeons and medical men have held these many years. The belief that bacteria may be present in the bloodstream without betraying their presence unless trauma occurs. This belief has been well exemplified in osseus and synovial tuberculosis. Some even have gone so far as to make it the basis of the first cause of the sarcomata. A young adult receiving a slight trauma develops sarcoma at the point of injury. Many others receiving similar traumata have no untoward result. Out of the many children who bump their shins there are the occasional few who develop tuberculosis at the point of injury. The belief would have it that so long as no devitalized tissue is encountered, such wandering bacteria are unable to assert their deleterious power.

On this hypothesis, together with our having demonstrated the presence of bacteremia following catharsis, we began the exclusion of catharsis from the preparation usual in cases going to operation. Five years have passed since and nothing has happened in consequence unless it be additional evidence that the giving of physic is wrong, often is productive of harm, and has nothing to recommend it beyond an habitual custom coupled with a timeworn traditional belief that a drug of definite action must be a drug of merit.

Many of our operations have been extensive, such as large ventral hernia associated with obesity, yet, with all, not in one did a stitch abscess develop; postoperative nausea was practically nil; not one patient complained of the socalled gas pains; not one suffered from postoperative phlebitis; not one, all being equal, but what enjoyed a comfortable convalescence.

The last four years of the five represent my work in the Queen's Hospital, Honolulu, while the first year was divided between the Good Samaritan and St. Vincent's Hospital at Portland, Oregon. From the viewpoint of the internist I hold no brief, nor am I in the least inclined to flaunt one word of this before those whose belief in cathartic giving has been exalted to a fixed faith. My contention is that cathartics should have no place where surgical interference is anticipated. For such drugs are likely to render the convalescence less safe, because bacteremia and traumatism are known to be the positive and negative phase of many obscure infections.

Our results show conclusively that concern regarding postoperative bowel motions is unfounded. One of our cases went fifteen days before bowel motion ensued. At no time of this was the convalescence marred. Three went twelve days without a movement, and several ten days. In no one of these did aught happen to show that such delay is capable of harm, and, while this length of time was the exception, it confirmed our belief in the security of noninterference.

The usual time for the bowels to resume their function of motility was from four to seven days after the operation.

But twice did we encounter a discomforting rectal impaction. An ounce of glycerine with an equal amount of olive oil injected through a soft rubber catheter gave immediate relief.

REFERENCES.

1. WHITE: *A History of the Warfare of Science with Theology in Christendom.*

Bacterial Vaccine Therapy in Children.—Ombrédanne (*Presse médicale,* March 5, 1921), from experience in sixty-six cases, asserts that the results from vaccine treatment in children are somewhat different from those obtained in adults. Local reactions are absent or markedly reduced as compared to adults. One instance of urticaria and five of scarlatinoid rash were, however, observed. The therapeutic effects were found to depend on the nature of the infection. Excellent results were obtained in various pyogenic skin affections such as furuncles and erysipelas, infected wounds, and glandular swellings and abscesses, which the author now finds it unnecessary to incise. An extensive, hard phlegmonous process in the popliteal space, previously incised without result, yielded to vaccine treatment. Impetigo, however, was not benefited. Good results were secured in periostitis of dental origin and in mastitis of the newborn. In one of the latter cases, the abscess, although ready to open, was absorbed in a few days under the vaccine. In mastoiditis no conclusive results were obtained, but postoperative vaccine treatment may act favorably on the later course of the case and should not be neglected. In appendicitis, but little in the way of favorable results was noted. In osteomyelitis, the author's results from vaccine were practically nil, although other observers have reported distinct benefit in this condition.

Editorial Articles

WHAT DO YOU READ?

Reading maketh a full man—so also does eating. But, as one may feed upon fodder or upon fat, so he may store his mind with that which will influence it profoundly for good or for ill. We have learned, or ought by now to have learned, that the bodily machinery is influenced by psychic states so that the material mechanism is affected by the stuff admitted to the mental maw. As it is unnecessary to analyze the stomach contents to discover the nature of the food which was taken into it, so it needs no elaborate psychoanalysis to learn the nature of the material a man exercises his mind upon. But how many physicians consider the indirect evidence of psychic influence and mental habit to be learned from a knowledge of the literature, music, or movies upon which his consultant feeds?

We have in mind the example of a young woman who has visited a number of physicians with the complaint of stomach trouble coupled with mental depression. Some very good advisers have told her that she is an "uninteresting patient," that "there is nothing the matter." Doubtless she does not know what or how to eat, though this seems usually of little consequence in a well nourished young woman, but as to her mental pabulum, she feeds on Amiel and stuff of similar consistency, sadly lacking in vitamines which stimulate the cheerfulness, to a buoyant outlook on life and to those mental conditions which are most needful for good digestion. The origin of a vicious circle of physical and mental depression lies, at least in large part, in her literary companionship. However it may have had its origin, her morbid outlook on life is continued—is nourished—by her reading. Formerly mental and moral pabulum were derived from the pulpit, but now the tables are bountifully spread with books and moving pictures and it is little wonder if the choice of diet is not always wise.

It is not at all beyond the realm of the physician's concern to inquire into, and to be genuinely interested in, the literary tastes of his patient, especially of the patient who has nothing the matter with him. It affords a subject for conversation, for intimate contact, even if it does not lead to the discovery of bad habits. At any rate it is not just to any consultant to tell him that there is nothing the matter with him until his mental machinery has been fully probed, and it should be remembered that to himself, the introspective individual is the most interesting thing in the universe.

Having found that a patient is keeping unsuitable literary company, the interest and advice of the physician may go far, with young people at least, in changing their mental associates. Emerson might be introduced in place of Amiel, and one can hardly be unhealthy who is in close acquaintance with and listens to the words of old Marcus Aurelius Antoninus. "Thou seest how few the things are, the which if a man lays hold of, he is able to live a life which flows in quiet, and is like the existence of the gods; for the gods on their part will require nothing from him who observes these things," and "That which is from fortune is not separated from nature or without an interweaving and involution with the things which are ordered by providence. From thence all things flow; and there is, besides, necessity, and that which is for the advantages of the whole universe, of which thou art a part. All that is from the gods is full of providence."

EXPECTATION OF LIFE PAST AND PRESENT

Professor Pearl writes, in the May *Scientific Monthly,* very entertainingly as well as scientifically (how seldom the two adverbs can be used in regard to the work of American scientists!) concerning the longevity of the human animal. Especially interesting is his comparison of data on the expectation of life at various ages for man in the present time, the eighteenth century, the seventeenth century, for the Romans, and for the Egyptians of some two thousand years ago.

The twentieth century statistics show decided gain in the expectation of years of life up to about middle age. At the age of one to two years there was, in 1910, remaining, for each of one hundred thousand children alive at the beginning of this age period, an average length of life of fifty-seven and eleven hundredths years; in the eighteenth century, forty-four and sixty-seven hundredths; and, according to the seventeenth century figures, only thirty-eight and ten hundredths years. At the ages twenty to twenty-one the figures were forty-three and fifty-three hundredths, forty-one and forty-six hundredths and thirty-three and sixty-one hundredths, respectively. Very unexpectedly, at the age of fifty the tables turn and the eighteenth century man had, from that time on, a greater expectation of life, while at about seventy those living in the seventeenth century also could anticipate a longer life than their present day descendants. "The expectation of life at early ages was vastly inferior in the seventeenth century to what it is now, while at advanced ages the chances of living were distinctly better—relatively enormously better—than they are now." "The changes in expectation of life from the middle of the seventeenth century to the present time furnish a record of a real evolutionary progression. In this respect at least man has definitely and distinctively changed as a race in a period of three and a half centuries."

The information as to comparative length of life of the Egyptians under Roman rule, two thousand years back, was obtained by the distinguished English scholar Carl Pearson through a study of the ages at death set forth on mummy cases. The figures are few and they do not run back into infancy. They show that in the early years of life the expectation was very low—much lower than in the seventeenth century—but between sixty-five and seventy the Egyptian of the time of Christ "could look forward to a longer remaining duration of life, on the average, than can the American of the present day."

Pearson says: "In the course of these centuries man must have grown remarkably fitter to his environment or else he must have fitted his environment immeasurably better to himself. . . We have here either a strong argument for the survival of the civilly fitter to survive today, or he is mentally fitter, i. e. better able to organize his civic surroundings."

Pearl comments: "During a period of two thousand years man's expectation of life at birth and subsequent early ages has been steadily improving, while at the same time his expectation of life at advanced ages has been steadily worsening. The former phenomenon may be attributed essentially to ever increasing knowledge of how best to cope with lethal forces of Nature. Progressively better sanitation, in the broadest sense, down through the centuries, has saved for a time the lives of ever more and more babies and young people who formerly could not withstand the unfavorable conditions they met and died in consequence rather promptly. But just because this process tends to preserve the weaklings, who were speedily eliminated under the vigorous action of unmitigated natural selection, there appear now in the higher age groups of the population many weaker individuals than formerly ever got there. Consequently the average expectation of life of ages beyond sixty to seventy is not nearly so good as it was under the more rigorous regime of Ancient Rome. Then any individual who attained age seventy was the surviving resultant of a bitterly destructive process of selection. To run successfully the gauntlet of early and middle life he necessarily had to have an extraordinarily vigorous and resistant constitution. Having come through successfully to seventy years of age it is no matter of wonder that his prospects were for a longer old age than his descendant of the same age today can look forward to. Biologically these expectations of life curves give us the first introduction to a principle which we shall find to be of the very foremost importance in fixing the span of human longevity, namely, that inherited constitution fundamentally and primarily determines how long an individual will live."

PHYSICIAN AUTHORS: DR. GEORGE MILBURY GOULD

It would be a trifle inaccurate to call Dr. George Milbury Gould, of Atlantic City, the Noah Webster of the medical profession simply because he has compiled a number of standard medical dictionaries, for there are points of difference in the art of lexicography as practised by the two men. Webster, for all his magnificent devotion to his task, did not put much color into his work; in fact, he deliberately barred it. Gould's definitions, in many instances, are full of color. They combine accuracy and personality—the charming personality of a man who is truly gifted in many directions. Even to a nonmedical man Gould's definitions are salty reading, and as to their scientific value it need only be said that after thirty years on the market new editions of them still are in demand. The publishers say the Pocket Edition is the best selling medical book in the world.

The quality of personality and charm is characteristic of all Dr. Gould's writings. Such an eminent critic as Professor Josiah Royce of Harvard spoke of "Dr. Gould's glowing pages," and Dr. Edward Willard Watson, in *Medical Notes and Queries,* said that "Style, the fairy, had touched him with her wand." He is always a keen thinker and knows how to marshal his thoughts, to make out a good case. He never tackles a subject half-heartedly. He puts his whole soul into it and there is no mistaking his earnestness, sincerity and zeal. His gift of forcible polemic writing is remarkable, and so too is his ability to gather facts and digest them. His literary work, however, has not all been cut on the polemic pattern. He has done a yeoman's service to literature in more ways than one, while at the same time attaining an eminence in his profession that assures him a prominent place in the annals of American medicine. His list of writings speaks eloquently of his learning and industry.

They are a varied list, leading off with a *Compendium of Diseases of the Eye,* published in the first year of his practice, 1888, and ending with *The Life and Letters of Edmund Clarence Stedman,* in two volumes, published in 1910, and written in collaboration with the then Miss Laura Stedman, granddaughter of Stedman, who on Oct. 3, 1917, became the second wife of Dr. Gould. His bibliography comprises something like 500 titles, chiefly medical, particularly on ophthalmology, in which field Dr. Gould has won worldwide fame as a specialist. During his writing period he also was editor of the *Medical News* (1891-1895), the *Philadelphia Medical Journal* (1898-1900) and *American Medicine,* (1901-1906). But since 1910 Dr. Gould has devoted his life and energy almost exclusively to his specialty. Writing books and articles has been ruled out by the exigencies of his large practice in eye work.

The strictly nonmedical volumes among Dr. Gould's vast output are not numerous. They include a volume of poems, *The Autumn Singer* (Philadelphia), 1897; *The Infinite Presence* (1910); *Concerning Lafcadio Hearn* (1908), and the Stedman biography. But there are several other volumes that, although they are basically medical, are of absorbing interest to the laity. These include six volumes of *Biographic Clinics,* a prodigious achievement in tracing and analyzing the physical ailments of some twoscore literary giants and outlining the effects of their ailments on their work; *The Meaning and Method of Life* (1893); two volumes of *Borderland Studies,* consisting of miscellaneous addresses and essays on doctors and medicine and their relation to general science and thought; a two volume *History of Jefferson Medical College* (his alma mater); and *Anomalies and Curiosities of Medicine* (1901), an encyclopedic collection of rare and extraordinary cases and of striking abnormalities in all branches of medicine and surgery. This monumental work of 968 pages was written in collaboration with Dr. Walter L. Pyle and medical literature of all ages and nations was ransacked to get the material for it.

William Dean Howells said of the Stedman biography that he wished it could be put into the hands of every aspirant in literature. "They would learn a thing or two—a thousand things or two—from it," he said. "As a piece of literature it is a very original performance," Andrew D. White, Stedman's classmate at Yale, called the biography "the most attractive, enjoyable and suggestive work of its kind I have read in many, many years." The book which perhaps aroused the greatest general interest of all Dr. Gould's volumes was *The Infinite Presence,* in which he expounded what the *Nation* called "a genuine biologist's religion." William James, the great psychologist, said of this work: "So far as the world goes my heart beats in full response to its pages, and I know not where to look elsewhere for texts as classic, in favor of naturalistic moralism, as those found in this book."

But most interesting of all to the literati is Dr. Gould's book on Lafcadio Hearn. It is a mine of Hearniana that none but Gould could have produced, for he was closer to that shy, strange genius than any other man. He knew Hearn for years, treated Hearn's myopia and Hearn lived at his home for a long period. But Dr. Gould did more than merely study and treat Hearn's defective vision. He studied the man himself, dissected his oddities, explored his mind, and guided and counseled him in his literary work. It was Dr. Gould who induced Hearn to go to Japan. "When I came to know him intimately and to understand how entirely peculiar was his genius," says Dr. Gould, "the thought grew more and more in my mind that he must go to Japan. He had worked out the West Indian vein and there was nothing in our American life to inspire him. His clean cut duty and function was to interpret primitive, alien and far removed life to our Occidental minds. In all the world there was no people so capitally adapted to give him both data and inspiration as the Japanese. Poetry, pathos, gentleness, Buddhism (his own Nirvana religion), and a whole universe of weird, reverberant mythology, folklore and tradition lay awaiting the magic touch of a worthy translator." It took a lot of persuasion to induce Hearn to make the trip, and even at the last moment it was difficult work to keep him from stepping off the ship. But as Dr. Gould says: "The end has justified the means. It is plain that the Japanese period and work crowns his life labors splendidly and that his masterful pictures of Japanese character, traditions and religion now constitute one of our most precious literary treasures." In *Concerning Lafcadio Hearn* Dr. Gould is at his best. The subject gives his analytical mind full play and his style flows on in an ever delightful manner. The chapter on Hearn's style is a splendid bit of literary criticism, and at the same time an outstanding sample of the quality of Dr. Gould's prose.

Dr. Gould was born at Auburn, Maine, on November 8, 1848, the son of George Thomas and Eliza A. (Lapham) Gould. He is a descendant of Robert Gould, who emigrated to Hull, Mass., from Somerset, England, in 1663. The family is widely spread through the New England and Middle West States. Several of them were prominent in the Revolution. Dr. Gould's parents moved to Ohio when he was a boy and he was educated in the public schools at Athens, Ohio. When he was only twelve years old he enlisted in the Sixty-third Ohio Volunteers and became one of that heroic little band of Civil War drummer boys. After eighteen months' service in the South he was discharged for disability, but in 1864 he enlisted again, this time as an infantryman in the 141st Ohio Volunteers, and served until the close of the conflict. After the war he resumed his studies, and in 1873 was graduated from Ohio Wesleyan University. He also studied two years at the Harvard Divinity School, then went to Europe to pursue advanced studies at Leipsic, Berlin and Paris. Upon his return he went into business in Ohio and it was not until 1885, when he was thirty-seven years old, that he decided to become a physician and entered Jefferson Medical College at Philadelphia, where he got his degree three years later.

QUALITY OF PROTEIN AND CAUSATION OF PELLAGRA

Pellagra is now generally regarded as a deficiency disease, that is to say, a disease due to a deficiency in the diet. By many all the deficiency diseases are looked upon as caused by lack or deficiency of the vitamines, but this view, perhaps, places too great responsibility upon the vitamines in the case of all the deficiency diseases, and certainly does so, in the opinion of most authorities with regard to pellagra. At the present time there seems to be somewhat of an obsession concerning the influence of the presence or absence of the vitamines upon the health. While their absence is assuredly prejudicial to health, in some instances possibly disastrous, their influence for good or evil is sometimes considerably exaggerated. The lack of vitamine element is of consequence undoubtedly in the production of pellagra, but the disease is caused by an illbalanced diet rather than one deficient in vitamine content. According to R. H. A. Plimmer, D. Sc., who lectured on the Quality of Protein in Nutrition at the Royal Institution, London, on April 8, 1921, recent work shows that quality of protein is most probably the primary cause of pellagra, although there are some indications that general insufficiency of protein, together with improper salt supply, are contributory factors.

That pellagra is a dietetic disease is more or less evident when it is recalled that there is no definite record of pellagra in Europe before maize was introduced into Spain by Columbus. From Spain the disease spread to France, Lombardy, and eastwards, wherever maize was extensively used for food in the poorer agricultural districts. It was in 1866 that Roussell showed that it could be cured by good food, and Lorentz in 1914, and Willets in 1915 successfully treated advanced cases by means of a generous diet. But it was Goldberger, in this country, who threw the most light on the etiology of pellagra. In the Southern States he cured and prevented the seasonal appearance of pellagra in lunatic asylums and orphanages by increasing the quantity of meat and milk, in which the diet had been previously deficient. But as Plimmer pointed out, Goldberger's chief experiments were done with eleven convicts, who tempted by the offer of the Governor of Mississippi of a free pardon, voluntarily submitted themselves to a feeding experiment to determine if pellagra could be produced by an unbalanced diet in healthy white men. These men were fed on white wheat flour, various maize preparations, polished rice, sugar, sweet potatoes, pork fat, cabbage and turnip tops. The food was sufficient in quantity, that is, it had an energy value of 2,950 calories, but was lacking in certain constituents necessary to maintain health at a high standard. After the second month on this diet, the men complained of weakness, headache, abdominal pain, and other minor discomforts. After five months, six developed a rash, which was pronounced by experts to be identical with that seen in pellagra. During the last four weeks all the men had shown marked loss of weight and were much out of health. Pellagra would probably have developed in the remainder, but the experiment had to be abandoned owing to the refusal of the men to continue. A control was carried out at the same time; their diet contained some meat, eggs and buttermilk; there was not a single case of pellagra and no progressive loss of body weight.

These experiments made by Goldberger appear sufficiently conclusive, and there are others, as well as facts which clearly point to the diet as the controlling factor in the cause and prevention of the disease. Plimmer further holds that the determining factor seems to be the quality of the protein and drew attention to the fact that good evidence on this point has been furnished by Wilson of Cairo. In 1916 pellagra broke out in a camp for Armenian refugees at Port Said. Wilson showed that the diet at first supplied was inadequate both in energy supply and protein supply; ninety-two per cent. of the protein was of vegetable origin, three quarters from wheat and one quarter from maize. Wilson calculated that the diet as given to the refugees was equal to no more than twenty-two grams of casein. On improvement to a casein equivalent of four grams no further cases of pellagra occurred.

Experiments with monkeys by Chick and Hume appear to show that pellagra is caused by a continuous shortage in the supply of certain amino acids in the food. A diet containing animal protein in small quantities will supply the essential amino acids, while a large supply of vegetable protein may not contain the needful amino acids. This quality of protein is of more consequence for the purpose of preventing or curing pellagra than quantity, and pellagra is a dietetic deficiency disease because it is brought about by an ill-balanced diet and not necessarily by a lack or deficiency of vitamine content.

APHASIA.

A man may wait all his life for recognition of merit; he may die without it; but, sooner or later, Justice assigns the credit due for the doing of something or foretelling its possibility. All praise is loyally rendered by Dr. Henry Head (Hughlings Jackson Lecture, Royal Society of Medicine, November, 1920) to Hughlings Jackson for his researches on aphasia. His work bore no fruit during his lifetime. The ideas he set forth were entirely opposed to those of his day, and yet, says Head, "when I set to work to gather material for the Hughlings Jackson Lecture (1920) I was startled to find he had long ago arrived at several of the general conclusions which had led me to disbelieve the teaching of my contemporaries. Fifty years ago, this founder of English neurology raised this question of disordered speech to a higher plane by rejecting all *a priori* conceptions, but medicine turned a deaf ear."

The lecturer, in speaking of the various forms of aphasia, said he had chosen the term semantic for that form which comprises want of recognition of the full significance or intention of words and phrases. The word or short phrase may be understood, but the ultimate meaning escapes the patient. He cannot formulate symbolically a general conception, though able to recognize the details. Reading and writing are confused in results. He cannot understand jokes or do arithmetic or put together puzzles. All this greatly interferes with daily work, and yet the man's memory or intelligence may remain at a high level. People, places, events are recalled without difficulty, but the power of estimating the ultimate or nonverbal meaning of words and phrases, the intentions of actions, is lost.

The problem of speech disorder has occupied attention for 2,000 years. Today the older psychology is fast vanishing, but all that was true remains and constitutes a sure foundation to those still exploring.

INDUSTRIAL ACCIDENT STATISTICS.

In spite of the elaborate machinery for tabulating industrial accidents which is maintained by certain states and by many industrial groups for their own information, accurate information for the country as a whole is conspicuously lacking. Margaret Gadsby, writing in the *Monthly Labor Review* of the U. S. Bureau of Labor Statistics (March, 1921), points out that the most elementary information—the mere number of accidents occurring within a given year—is unavailable for the country as a whole. Similarly, there is no way of ascertaining the annual cost in time and money and productive efficiency lost through industrial accidents, much less of determining whether workmen's compensation laws and the safety movement have decreased accidents.

Miss Gadsby, recognizing that complete information is essential for accident prevention, emphasizes the need for cooperation among the state commissions handling accident data, particularly among the larger industrial states. Standardization of industrial statistics for purposes of comparison would be of immense help. In this connection Miss Gadsby mentions that standard plans for presenting accident data have been prepared by the committee on statistics of the International Association of Industrial Accident Boards and Commissions.

◆

News Items.

The Nation's Health.—Effective with the issue of May, 1921, Modern Medicine is being published as *The Nation's Health.*

100 New Beds for Hospital.—The South Baltimore General Hospital plans enlargement by erection of buildings which will allow an increase of 100 or more beds. The infirmary will be enlarged.

United States Civil Service Examination.—The United States Civil Service Commission announces an examination for medical intern to fill vacancies in Saint Elizabeth's Hospital, Washington, D. C., at $1,200 a year and maintenance. Positions are tenable for one year. Applications will be rated as received until July 1, 1921. Further information can be obtained from the Civil Service Commission, Washington, D. C.

Maryland Has a Model Town.—Uncle Sam's model village is at Perryville, Md., developed by the United States Health Service on a 516 acre tract. The population of the reservation is 839 persons, the birth rate was 39.33 per thousand, against 24.78 in the whole state and 28.78 in the country. The death rate was only 3.67, the excess in children being about balanced by the deficiency in aged persons. Much credit for the low death rate is due to the efficient health administration.

Medals to X Ray Martyrs.—The French commission, endowed by the Carnegie Foundation and headed by former Premier Loubet, has awarded three gold medals to Dr. Charles Infroit, Dr. Adolphe Leray, and Dr. Vaillant, who also receives 50,000 francs. Dr. Infroit and Dr. Leray both died recently as a result of their x ray research work. Dr. Vaillant suffered ten amputations in ten years, losing fingers, then a hand, and finally his left arm. He is still experimenting, however.

Personal.—Dr. James S. Hall, of Oyster Bay, has been appointed health officer of the town of Oyster Bay by the town board.

Dr. Samuel W. Lambert, dean emeritus of the faculty of medicine, Columbia University, was awarded an honorary degree of Doctor of Science at the commencement exercises on June 1.

Dr. Walter T. Dannreuther has been promoted from assistant professor to associate professor of gynecology at the New York Post-Graduate Medical School and Hospital.

University of Pennsylvania Creates Chair of Applied Endocrinology.—For the first time in the history of medicine, a chair of Applied Endocrinology has been created at the University of Pennsylvania. Dr. Charles E. DeM. Sajous has been appointed to occupy this chair.

Externship Established in X Ray Department.—There has been established at the Mount Sinai Hospital, New York, a system of externship in the X Ray Department. There are to be externs, each serving one year, one beginning February 1st and the other August 1st. The next appointment begins on August 1, 1921.

Tuberculosis Ravaging Balkans. — Homer Folks, secretary of the State Charities Aid Association of New York, after a two year survey of Europe following the Armistice, says the problem with the Balkans and especially Servia is tuberculosis. There is a staggering infant mortality. With a few doctors and good supply of nurses the disease could be checked. The Serbian death rate is greater among the people than among the sheep. There are three women to one man working at hard labor in the fields.

Health Board Finds Schools Are Unfit.—The reports of bad and insanitary conditions found in the public and elementary schools of New York city by investigators of forty different civic and other organizations were corroborated by officials of the Department of Health. In spite of the fact that some of the buildings investigated are declared to be unfit to house human beings, Dr. Royal S. Copeland, commissioner of health, said he did not believe that there was any immediate danger to the health of the school children if reasonable precautions were taken and efforts made to complete the necessary repairs and extensions of the school plant.

Medical Officers Scarce.—The Medical Corps of the Navy is confronted by a discouraging situation. Approximately 600 vacancies have occurred, and to fill these vacancies during the last year only six medical officers have been appointed from civil life, and only 100 from the reserve and temporary medical officers. This situation is due largely to the fact that private practice is more remunerative. Officers in the Medical Corps of the Navy who believe that the right kind of material can be secured for the Navy are hopeful that the department will take steps to influence medical men.

New Tuberculosis Hospitals.—An outline of the construction plans for the tuberculosis hospitals so much needed for the treatment of ex-service men will soon be published by the U. S. Public Health Service; and it is earnestly hoped that funds for their construction will soon be available. In the preparation of these plans, which are believed to embody the best principals of sanatorium construction collected from a multitude of sources, valuable assistance has been rendered by T. B. Kidner, of the National Tuberculosis headquarters. Mr. Kidner has been on duty with the Public Health Service for several weeks at a time, at intervals during the year; and the results of his study will be described and illustrated in the outline about to be issued. Copies of the publication may be had by application to the Surgeon General in the Public Health Service.

Died.

Ballintine.—In Rochester, N. Y., on Thursday, May 19th, Dr. Eveline P. Ballentine, aged sixty-nine years.

Bailey.—In Biggsville, Ill., on Tuesday, May 17, Dr. John A. Bailey, aged seventy-six years.

Baruch.—In New York, on Friday, June 3rd, Dr. Simon Baruch, aged eighty-years.

Bayley.—In Poughkeepsie, N. Y., on Tuesday, May 24th, Dr. Guy C. Bayley, aged seventy years.

Bolin.—In Tacony, Pa., on Friday, May 27th, Dr. J. Albert Bolin, aged sixty-five years.

Briner.—Columbus, Ohio, on Thursday, May 19th, Dr. Charles D. Briner, of Williamsport, aged fifty-nine years.

Brooks.—In Brookline, Mass., on Friday, May 20th, Dr. William Allen Brooks, aged fifty-seven years.

Cummings.—In St. Louis, Mo., on Sunday, May 15th, Dr. Harry J. Cummings, aged fifty-five years.

Davenport.—In Scranton, Pa., on Sunday, May 15th, Dr. Frederick Marshall Davenport, aged fifty years.

Dice.—In Zenia, Ohio, on Wednesday, May 18th, Dr. James P. Dice, aged seventy-nine years.

Emmet.—In Ridgefield, Conn., on Friday, May 27th, Dr. Bache McEvers Emmet, of New York City.

Esterly.—In Topeka, Kan., on Sunday, May 8th, Dr. Daniel E. Esterly, aged fifty-four years.

Evans.—In Christiansburg, Va., on Tuesday, May 17th, Dr. Alban D. Evans, aged fifty-three years.

Gilbert.—In Louisville, Ky., on Wednesday, May 18th, Dr. Richard B. Gilbert, aged seventy-eight years.

Hayden.—In Mount Olive, Ark., on Saturday, May 7th, Dr. Rant Hayden, aged sixty-eight years.

Hill.—In Germantown, N. C., on Friday, May 13th, Dr. Lauriston H. Hill, aged eighty-four years.

Horton.—In Watrace, Tenn., on Monday, May 23rd, Dr. George Elmer Horton, of Shelbyville, aged forty-five years.

Hoyt.—In Detroit, Mich., on Thursday, May 19th, Dr. Benjamin Rush Hoyt, aged seventy-two years.

Ingalls.—In Mayfield, N. Y., on Wednesday, May 25th, Dr. Gilbert Ingalls, aged sixty-nine years.

Johnston.—In Lagrange, Tenn., on Thursday, May 12th, Dr. John C. Johnston, aged fifty-one years.

Kerr.—In Emlenton, Pa., on Friday, May 20th, Dr. Clinton Stuart Kerr, aged seventy-three years.

Knickerbocker.—In New York, on Monday, May 23rd, Dr. Edwin W. Knickerbocker, aged fifty-two years.

Knott.—In Los Angeles, Cal., on Saturday, May 14th, Dr. John N. Knott, aged seventy-five years.

Loughridge.—In Omaha, Neb., on Thursday, May 19th, Dr. William K. Loughridge, aged forty-eight years.

Mandelbaum.—In Brooklyn, on Tuesday, May 24th, Dr. Abraham Mandelbaum, aged fifty years.

Manker.—In Memphis, Tenn., on Thursday, May 19th, Dr. Rives Andrew Manker, aged thirty-eight years.

Mason.—In Milwaukee, Wis., on Saturday, May 14th, Dr. Frank Mason, aged fifty-three years.

Mauzey.—In Findlay, Ill., on Wednesday, May 18th, Dr. Warren Hugh Mauzey, aged fifty-five years.

McCarthy.—In Winchester, Mass., on Friday, May 20th, Dr. Charles F. McCarthy, aged fifty-one years.

McClelland.—In Philadelphia, Pa., on Wednesday, May 18th, Dr. Robert Watson McClelland of Pittsburgh, aged sixty-four years.

Meek.—In South Norwalk, Conn., on Sunday, May 29th, Dr. James Francis Meek, aged seventy-three years.

Mengle.—In Trevorton, Pa., on Thursday, May 26th, Dr. John S. Mengle, aged sixty years.

Nevinger.—In Philadelphia, on Thursday, May 26th, Dr. Martin J. Nevinger, aged forty-four years.

Pilcher.—In Columbus, Ohio, on Wednesday, May 18th, Dr. Francis Nelson Pilcher, aged fifty-three years.

Rogers.—In Washington, D. C., on Sunday, May 29th, Dr. Franklin Rogers, aged seventy years.

Sherman.—In San Francisco, Cal., on Sunday, May 15th, Dr. Harry M. Sherman, aged sixty-eight years.

Taylor.—In Lexington, Ky., on Sunday, May 22nd, Dr. A. Porter Taylor, aged sixty-four years.

Vogel.—In Cincinnati, Ohio, on Wednesday, May 18th, Dr. Fred C. Vogel, aged forty-five years.

Woodward.—In Somerset, Ohio, on Sunday, May 15th, Dr. Robert B. Woodward, aged eighty-two years.

Book Reviews

VENEREAL DISEASES.

Untersuchungsmethoden und Diagnose der Erreger Geschlechtskrankheiten. By F. O. Oelze, M. D., Ph. D. (Munich). With Fifty-eight Illustrations and Four Plates. Munich: J. F. Lehman's Verlag, 1921.

The author has described in detail the many technical methods employed in the diagnosis of the venereal diseases. Considerable space is devoted to dark field illumination and its relation to the diagnosis of the Spirochæta pallida in primary syphilis. Staining methods in syphilis, chancroid and gonorrhea also are given in detail. There is an excellent bibliography on the subject of the Spirochæta pallida, in which many of the titles are briefly described and their substance abstracted. Readers will find this a most useful feature of the book.

Under the subject of urinary tests in the diagnosis of gonorrhea, we notice the author credits an English author, Norman Lumb, with being the originator of the five glass irrigation test first described by Wolbarst, of New York. This is accounted for by the fact that Lumb described the test in his little book (which was reviewed in this journal some time ago), without giving due credit to its American originator. On the whole, the book is of value in so far as it brings under one cover the numerous tests and important technical measures used in the diagnosis of venereal disease. A more widespread use of these tests in general practice would materially reduce the severity of these infections. An English translation might prove of considerable value to American and other English-speaking physicians.

THE SCHOOL OF SALERNUM.

The School of Salernum. Regimen Sanitatis Salernitanum. The English Version by Sir John Harrington. History of the School of Salernum by Francis R. Packard, M. D., and a Note on the Prehistory of the Regimen Sanitatis by Fielding H. Garrison, M. D. New York: Paul B. Hoeber, 1920. Pp. 215.

This book has much to recommend it to the possession of any physician. It would surely lighten and enliven the weary days of any patient on whose bedside table it lay. Indeed the ancient text it contains was intended, as the introduction tells us, as a handbook of domestic medicine. This same introduction is a history of the famous school of Salernum. It shows the place of this school in the general medieval midnight of medical science. It was not that in itself it cast any special scientific light there, but it held its own at that time in its wide popular influence and in its recognition by various authorities of its day, royal or otherwise. Various writings of interest at least as historical medical curiosities are associated with its existence. This introduction contains also the discussion of the relation of this regimen to the school, its possible origin there and the later history of the treatise. The prehistory of this same regimen receives special treatment by Doctor Garrison.

Then follows the text and the illustrations, the text in its first English translation of 1607. These comprise the delightful little compendium of advice, often sage in wisdom, sly in humor, warm in appreciation of human weaknesses and of the qualities of herbs, meats and drinks to gratify them or, better, to fortify against them and cure their manifestations. The book may be read by the scientist seeking anticipatory gleams of present brilliancy in the nebulous light of the past. He will not find much illumination. There is a warmer radiance for the mere historian and a hearty good cheer for the reader of the experimental fumblings of humanity out of darkness into light. Experiment or rather experience was even then producing dissension, for we find it stated to be disputed that

> *September, April, May,* have days apeece,
> That bleeding do forbid, and eating Geefe.

That consideration was taken for other needs of adaptation than merely keeping well is shown by advice given to a widow who must feign a sadness uncalled for by the husband's demise:

> Yet if in fhew good manners fhee will keepe,
> Onyons and Mustard-feed will make her weepe.

BRIEUX.

Three Plays. By Brieux, Member of the French Academy. With Preface by Bernard Shaw. New York: Brentano's, 1920. Pp. liv-333.

When shall we dare to know the truth that shall make us free? Mankind has always shunned the direct facing of facts in order to act upon them at their true value. If anyone here or there is bold enough to fling the existence of certain actualities out into the face of the public, this or that protective measure serves to conceal their sharpness. It does not, however, obliterate the insidious working of the facts in human lives. Society may cry its unbelief of the truths brought to attention, or it may merely object to the propriety of revealing them. The facts, no respecters of the opinions of men, proceed to their effects.

Brieux presents some of the most painful truths of modern life in absolutely unvarnished form, but his statements are never brutal. The sincerity of his utterances is marred neither by evasion of fact nor by insistence on unessential details. There is enough in these plays to bring forcibly to society's notice several matters which it has too long sought to evade, that which its hypocritical delicacy has preferred to hush out of sight. Brieux's interest lies not in the handling of such facts, but in the clean health to be attained when a scalpel first reveals than strips away the elements of evil.

Maternity lays bare the insincerity of official advocacy of measures to encourage increase of population in France. To the official proclaiming and urging such measures the motive is merely his own personal preferment in office. There is no genuine human interest which would lead to a testing of the measures in relation to actual human conditions. Instead there is cold, selfish disregard of the definite instances of maternity which fall under this official's notice. His wife's childbearing is merely subservient to his will, with his satisfaction alone considered. His wife's sister, a mother through the seduction of a man who then deserts her, an acquaintance urged by the brother-in-law also to his official advantage, is brutally flung out into the world to shame and death. Brieux introduces into the last act, as he does in *Damaged Goods,* a consideration of the problems presented as they affect also other classes of the population. In both instances, therefore, the broad economic and social involvements are set forcibly over against the narrow view of an ignorant and selfserving policy.

Damaged Goods exposes the false security again upheld by an ignorance which fortifies itself under the omnipotence of the wish. The chief incident of the play rests upon the all too prevalent believing a thing to be true because one wants it to be so. This and the particular evil it protects are common enough. The fearless exposure of the dire consequences strikes deep into the ignorance due to indifference. Cowardice and selfishness in the case of a syphilitic infection result in the infection of the innocent child and almost wreck the home. The selfishness would extend itself deliberately to further indirect propagation of the disease did not the doctor fearlessly maintain the right. It is not only the events of the tragedy in one home and the scenes at the hospital in the last act which present the subject in telling form, but the ringing words also in the doctor's mouth paint the picture of things as they exist and courageously point out the way to be followed. Knowledge and honesty are the sovereign remedies against the ravages here portrayed.

The other play of the book, *The Three Daughters of Monsieur Dupont,* sets forth the threefold misery of woman's life as a result of obedience to established custom. Customs, standards based upon false pride and dependent servitude to base advantage, rather than a realization of the individual, control the society of the Dupont family. The three daughters are variously the victims. One marries for her parents' worldly advantage even more than for her own. She is only saved in the end from a reckless revolt against the miserable immorality of it.. For she redeems the situation by a tardy realization that a true love may enter and rebuild the life into something wholesome. The oldest daughter has apparently eschewed love only unexpectedly to reveal the bitter starvation of her soul. She all but wrecks its happiness in an ill based dream. The youngest daughter had early been enticed by false love. Brutally turned adrift by her father, she had made her early mistake the entrance into a career of shame, the life that has "no friends, no pity, no justice."

Brieux's plays need no apology, no introduction, when one has once gone directly to their words. The preface that Shaw has written is, however, a valuable treatise in itself. It sets Brieux in his place among other writers who deal with the unpleasant facts of life and shows wherein lies the French dramatist's particular strength of service. It estimates him in the light of French predecessors in the dramatic field. It pleads, or rather it contends, in Shaw's own way for the fearlessness, the honesty, the knowledge in behalf of which Brieux himself writes.

JOURNEY'S END.

Journey's End. By Edna A. Brown. Boston: Lothrop, Lee & Shepard, 1921. Pp. 414.

Back to Journey's End in Freeport, Massachusetts, back from medical duty in the Great War, comes Dr. Amory Russell, renouncing many advantages just to practise at Freeport, because he loved the place and his old aunt Eunice and all the memories of his gentle Quaker upbringing. Handsome, clever, he tumbles right away into love with Elizabeth Emerson, his next door neighbor, and with the comely Quaker speech he woos and wins her—not an easy task for she has a touch of the devil, just enough to make her winning extraordinary.

The quiet life among Quaker connections is only broken by a malignant ivory dragon which an uncle had brought from China. It stands in the east parlor and brings ill luck to those who venture there. It is discovered there by a Tong or Chinese secret society and Chinese make many attempts to steal it, as they attach great importance to its possession. Finally, they succeed, but there is a row in the Chinese quarter and the Dragon is left unclaimed and is sold, bought by Amory and sunk in the sea, whereupon all difficulties being over, including a lover's quarrel, the story ends in marriage and general happiness. *Journey's End* is a quiet and dreamy place for those to linger who are tired of stories where unhappy marriages, divorce, and all that which is ungracious whirl the reader tempestuously along. It is a healthy book which is free from cynical disbelief in married happiness and one which may help to cleanse unwholesome thinking.

BRITISH FICTION.

Howards End. By E. M. Forster. New York: Alfred A. Knopf, 1921. Pp. vii-393.

This novel comes to us from a British author little known in this country and, so an English friend informs us, not a best seller in his own. It is nevertheless a book of rare loveliness, cool, imaginative, sympathetic, tinged with a delicate irony, and written with an almost perfect technic. There are no tricks of the trade in this novel; it is not sensational or didactic; it recreates not merely streets and drawing rooms but the overtones, the intellectual atmosphere, and with all this the starkness of tragic and futile lives.

Howards End might be characterized as a problem novel, if that controversial term can be applied to as distinguished and lovely a piece of writing. Mr. Forster's people are primarily living beings, however, and the problem—that the inner life "pays," as distinguished from the "outer life of telegrams and anger"—grows inevitably out of character. In spite of its philosophical import, the book is written with a light touch, surely wielded.

Around and beyond the theme of the book is Howards End, the country place which Mrs. Wilcox loves as a part of herself. On her deathbed she bequeaths it to Margaret Schlegel, whom she conceives as a spiritual heir, and the Wilcox family, who live in the world of "telegrams and anger," ignore the bequest as fantastic—and nonlegal. But the lives of the remaining Wilcoxes and the Schlegels are interwoven, and in the end, long after Margaret has married Mr. Wilcox and the worldly success of the Wilcoxes has broken beneath the imprisonment and disgrace of one of their number, it is Margaret, the amiable and academic, who makes their lives whole. Mr. Forster makes the inner life pay to the extent that Margaret even gets the Howards End of which she was defrauded by the acquisitiveness of the Wilcoxes. Not always, of course, are the hosts of the worldly vanquished as are the Wilcoxes. But this does not detract from the essential truth of the fact that when familiar props crash down into ruin, it is the possessor of the "inner life" that brings something out of the wreckage.

There is a sociological touch to the book in the character of Leonard Bast, the clerk, descendant of farm laborers, who in coming to the city has lost his homely vitality without acquiring civilization. Civilization, as Leonard himself realizes, can not adhere when you have only tired hours after a day's drudgery. Culture does not flourish on underfeeding. Never was the truth of Shaw's epigram that keeping a soul is more expensive than keeping an automobile more aptly shown. Money is all that will help the Basts—leisure, to be bought only by money, freedom from the grindstone, travel. There can be no inner life for Leonard Bast, and he too goes down to a destruction more awful by far than that of the Wilcoxes.

With all its meaty content, *Howards End* is easy reading. It is, moreover, a book that inevitably draws one back again, and this is saying much.

MARITAL BEHAVIOR.

A Free Union. By MARY MARCY. Chicago: Charles H. Kerr & Co., 1921.

This "comedy of free love" is written around the assumption that free unions are really no freer than the other sort—a theory which has been much bandied about of late and which of course depends for its applicability on the particular persons involved. In this play they are a woman who gushes over art and a poet who is nothing more nor less than a fireside male. A male gusher and a fireside female complete the cast. The female gusher takes the poet so much for granted that she henpecks him unmercifully and her gentleman friend borrows all his silk shirts. With this lady on his hands, it is little wonder that the poet flees to respectability and matrimony with the fireside female. They are infinitely more comfortable and quite as free.

As will be noted from this brief sketch, the play is a broad burlesque, done with a rather heavy hand. The characters are all overdrawn.

◆

New Publications Received.

[*We publish full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we review those in which we think our readers are likely to be interested.*]

THE NARROW HOUSE. By EVELYN SCOTT, Author of *Precipitations.* New York: Boni & Liveright, 1921. Pp. 221.

HE, THE ONE WHO GETS SLAPPED. A Play in Four Acts. By LEONID ANDREYEV. Translated from the Russian with an Introduction by GREGORY ZILBOORG. New York: The Dial Publishing Company, 1921. Pp. 75.

JOURNEY'S END. By EDNA A. BROWN. Boston: Lothrop, Lee & Shepard Company, 1921. Pp. 414.

THINGS THAT HAVE INTERESTED ME. By ARNOLD BENNETT. New York: George H. Doran Company, 1921. Pp. xi-332.

COMPLETE INDEX TO KEEN'S SURGERY, Volumes I to VIII. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 182.

THE PRINCIPLES OF THERAPEUTICS. By OLIVER T. OSBORNE, M. A., M. D., Professor of Therapeutics, Department of Medicine, Yale University. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 881.

YE OLDEN BLUE LAWS. By GUSTAVUS MYERS, Author of *The History of the Great American Fortunes, History of the Supreme Court of the United States, History of Tammany Hall.* Illustrated. New York: The Century Company, 1921. Pp. v-275.

THE EXTRA PHARMACOPŒIA OF MARTINDALE AND WESTCOTT. Revised by W. HARRISON MARTINDALE, Ph. D., F. C. S., and W. WYNN WESTCOTT, M. B. (Lond.), D. P. H. Seventeenth Edition. Volume II. London: H. K. Lewis & Co., Ltd., 1921. Pp. xxxii-638.

RUSSIA IN THE "EIGHTIES." Sport and Politics. By JOHN F. BADDELEY, Author of *The Russian Conquest of the Caucasus, and Russia, Mongolia, China.* With Two Illustrations and Four Maps. New York, Bombay, Calcutta, and Madras: Longmans, Green & Co., 1921. Pp. xii-466.

PRACTICAL CHEMICAL ANALYSIS OF BLOOD. A Book Designed as a Brief Survey of This Subject for Physicians and Laboratory Workers. By VICTOR CARYL MYERS, M. A., Ph. D., Professor of Pathological Chemistry in the New York Post-Graduate Medical School and Hospital. Illustrated. St. Louis: C. V. Mosby Company, 1921. Pp. 121.

A PRIMER FOR DIABETIC PATIENTS. A Brief Outline of the Principles of Diabetic Treatment, Sample Menus, Recipes, and Food Tables. By RUSSELL M. WILDER, Ph. D., M. D., MARY A. FOLEY, Dietitian, and DAISY ELLITHORPE, Dietitian, The Mayo Clinic. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 76.

THE PRINCIPLES OF HYGIENE. A Practical Manual for Students, Physicians, and Health Officers. By D. H. BERGEY, A. M., M. D., Dr. P. H., Assistant Professor of Hygiene and Bacteriology, University of Pennsylvania. Seventh Edition, Thoroughly Revised. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 556.

MEDICINE FOR NURSES. By JOHN HENDERSON, M. D., Ch. B., F. R. F. P. S. G., Visiting Physician, Glasgow Royal Infirmary; Professor of Medicine at St. Mungo College, Glasgow; Lecturer-Examiner in Clinical Medicine, Glasgow University; Lecturer and Examiner in Medical Nursing, Glasgow Royal Infirmary. London: Edward Arnold, 1921. Pp. 263.

SURGERY, ITS PRINCIPLES AND PRACTICE. By Various Authors. Edited by WILLIAM WILLIAMS KEEN, M. D., LL. D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume VIII. With 657 Illustrations, Twelve of Them in Colors. Philadelphia and London: W. B. Saunders Company, 1921. Pp. 960.

SURGICAL NURSING, AND THE PRINCIPLES OF SURGERY FOR NURSES. By RUSSELL HOWARD, C. B. E., M. S., F. R. C. S., Surgeon, London Hospital; Member of Council, Royal College of Nursing; Lecturer Surgical Nursing, London Hospital; Examiner to Nurses, Westminster Hospital, Royal Sussex Hospital, Bristol Royal Infirmary, East Suffolk and Ipswich Hospital. Fourth Edition. London: Edward Arnold, 1920. Pp. xvi-320.

A HANDBOOK OF SKIN DISEASES AND THEIR TREATMENT. By ARTHUR WHITFIELD, M. D. (Lond.), F. R. C. P., Professor of Dermatology and Physician to the Skin Department, King's College Hospital; Late Physician to the Skin Department, Great Northern Central Hospital; Consulting Physician for Diseases of the Skin, Queen Alexandra Military Hospital; President of the Dermatological Section, Royal Society of Medicine. Second Revised Edition. London: Edward Arnold, 1921. Pp. xii-291.

Practical Therapeutics

SOME OBSERVATIONS ON THE TREATMENT OF WOUNDS.

By Hubley R. Owen, M. D.,

Philadelphia.

These postbellum days are crowded with war inspired surgical procedures, wise and otherwise. Occasionally we find that a tomb of surgical antiquity has been violated, and the crumbling shroud of an ancient and rugged truth has been disguised in the soft garments of modern phraseology. I am not of the select few to whom has been granted the privilege of discovery of a new idea, and if I discuss well known fundamental—even elementary—principles, it is because not a few of the abuses existing in our industrial and hospital dispensaries result from neglect of primary fundamental surgery.

The duties of the industrial surgeon are three—to relieve the injured employee, to restore him to full wage earning capacity at the earliest date, and to reduce time lost to employer. To accomplish these results many important steps have been taken, such as the safety first movement, first aid instruction, and the establishment of industrial clinics and dispensaries. The safety first movement is still in its incipiency. Its scope is growing daily, not only in industrial plants but in schools and other departments of our municipalities. It is a strange fact that our towns and cities are usually the last instead of the first to endorse such a movement. When a municipality finally does endorse such propaganda, there usually follows more talk than work. The results are often poor. A municipality seldom practices all that it preaches.

THE FIRST AID LAYMAN.

Great care must be taken with instructions to the layman on the subject of first aid. The first aid enthusiast is far too often a tyro, who may be dangerous. He frequently does more harm than good. Many wounds treated by him would heal more speedily without his first aid treatment. In an emergency he may be a complication instead of a blessing, and we have often hoped that his first aid may be his last. The use of iodine as the great panacea in the first aid treatment of wounds is greatly overdone. The layman has been instructed to paint every wound with iodine, irrespective of the strength of the iodine or character of the injury. As a result the tissues are often irritated and iodine burns are frequent. Although it is a drastic statement to make, yet I have seen more evil than good result from iodine used as a first aid expedient. This is not because of its use but because of its abuse. The difference between the use of iodine as a disinfectant of a wound, as a disinfectant of the skin and as a counterirritant, does not seem to be sufficiently emphasized by the surgeon. Certainly this distinction is understood imperfectly by the first aid worker. The same strength is often erroneously used for every purpose.

Another frequent dressing for a wound is the application of iodine followed by a hot bichloride of mercury compress. This always causes severe irritation of the wound with actual vesication of the surrounding skin. A basin of bichloride of mercury should not be permitted in the same room in which iodine is being used. It is perfectly right to teach the use of iodine as a first aid treatment of wounds, but explicit instructions should be given as to the strength of the iodine to be used, the character of the wound to which it is to be applied, and the proper dressing after such application. Any antiseptic used in sufficient strength to irritate a wound and the surrounding skin lessens tissue resistance, increases wound fluid, and makes the wound more likely to be infected.

PEROXIDE OF HYDROGEN.

Peroxide of hydrogen is another drug which is misused in our dispensaries by the first aid workers. Peroxide is far too often poured into a wound regardless of whether the wound is cleanly incised or infected. Peroxide is a cleansing agent. It is not a germicide. It may be used to clean a dirty wound or to assist in the removal of small particles of dirt or other foreign bodies. It should not be used in a sterile wound. If used in the treatment of boils and carbuncles or abscesses the liberation of oxygen in the presence of pus will tear tissues, break down normal barriers, and spread infection. Yet many persist in using peroxide in such infections.

BICHLORIDE OF MERCURY.

Time does not permit me to cite the many abuses of bichloride of mercury. The evils resulting from the use of bichloride of mercury in surgery seem to have outweighed any of its alleged virtues. Its use has been attended by death and destruction. It has a host of incompatibilities. "Does bichloride of mercury ever do any good whatsoever in surgery?" would be a very proper subject for debate in a medical society. If bichloride of mercury should pass into the state of surgical desuetude the sole mourners would be undertakers, and most of the surgeons would agree with Shakespeare that "The tears live in a onion that would water this sorrow." Bichloride of mercury, however, has been the most abused because it is the best known antiseptic, but instances of the improper use of other antiseptics in the treatment of wounds could be multiplied indefinitely.

CARREL-DAKIN TREATMENT.

In the autumn of 1917 I had the opportunity of taking the war course of instruction in the treatment of wounds at the Rockefeller Institute under Dr. Carrel. It was my initiation into the correct technic of the Carrel-Dakin treatment. It is not my purpose to discuss the Carrel-Dakin technic, nor the results obtained. Those who still decry the use of the method do not carry out the procedure in its minute detail. At that institute we studied the action of numerous antiseptics on the tissue. We noted daily the healing of wounds, macroscopically and by bacteriological tests, as well as with the use of the planometer. We were taught the value of properly cleansing a wound. By properly cleansing a wound is not meant washing the wound with peroxide or bichloride, but removing all foreign bodies and devitalized tissues, shaving the hair surrounding the wound, and washing the wound and surrounding skin with neutral soap and water, followed by ether.

Very often a wound cannot be properly cleansed without an anesthetic. Anesthesia is not employed frequently enough for this purpose. In France, Severiand's mixture is used. It is a rapid anesthetic. In my dispensary work, in the police and fire departments, nitrous oxide gas is used. Many wounds will heal readily without any treatment other than daily cleansing of the wound and surrounding skin in the manner described. Too much stress cannot be laid upon the necessity of the daily removal of all crusts from the edges of the wound. Under these crusts are harbored the bacteria which retard granulations. Those who take routine cultures of wounds know that often, after the surface of a wound is sterile, a positive culture can still be obtained by passing the platinum loop under these crusts.

A large infected wound should be treated with the instillation of Dakin fluid by the Carrel technic. Debridement is not indicated in civil surgery as frequently as in military surgery, but debridement is an accepted principle of surgery and should be practised in civil or industrial surgery when indicated.

DICHLORAMINE-T.

An infected wound of smaller size can be treated with chlorinated oil. The abuse of this oil either as a first aid measure or as a treatment to be continued must be prevented. If the dichloramine-T is too strong or decomposed after standing a number of days, it will irritate. Dakin's solution is unstable and a fresh solution must be made daily. Dichloramine-T must be watched closely each day, as it becomes rancid. This point is frequently neglected in dispensaries. The dichloramine-T is used until the bottle is emptied, without thought as to whether or not the oil has become rancid. A rancid oil will often cause irritation. As stated in the first paragraph of this paper, these facts are essentially elementary, but the neglect of these first principles causes our employees to lose unnecessary time due to the delay in healing of the wounds.

Ether has been mentioned in connection with the cleansing of a wound. This is a most useful agent. In my first aid work, at the present time, I am using more ether than iodine. The wound and surrounding skin are washed with ether, and a sterile dressing applied. This is more satisfactory than iodine, although the procedure is more expensive.

When a wound is sterile it will heal without the further use of antiseptics, provided there is no secondary contamination. Some sterile wounds can be closed with secondary suture; this shortens convalescence. Secondary suture is especially applicable to gunshot wounds which usually require extensive debridement. Secondary closure is another accepted surgical principle which should not be neglected in civil or industrial surgery. Upon a sterile granulating wound, not suitable for secondary sutures, paraffin mesh and a sterile gauze dressing or a salt solution should be applied. The paraffin mesh prevents the gauze from sticking to the granulations, permits sufficient drainage of secretions, and, by making pressure, tends to prevent flabby or exuberant granulations.

Unhealthy granulations are those which are pale or edematous and those which grow too slowly or too rapidly. Granulations which rise above the cutaneous level are unhealthy. These are called exuberant granulations. The causes of unhealthy granulations are local and constitutional. The local cause is irritation, due to infection or the use of too strong an antiseptic. If, after the technic of local treatment has been corrected, the wound does not heal, a complete blood count should be made, a Wassermann taken, and the urine examined. If these tests are made routinely, many cases of delayed healing will be found to be suffering from anemia, Bright's disease, syphilis, or diabetes.

PUNCTURED WOUNDS.

Punctured wounds and poisoned wounds are always worrisome. Until a year and a half ago it has always been my policy to open a punctured wound by crucial incision, to search the wound for foreign bodies, to disinfect the wound with carbolic acid, washing away the excess of the acid with alcohol, and to drain the wound. For the past eighteen months I have not used carbolic acid in either punctured wounds or poisoned wounds. A punctured wound is now opened by crucial incision, searched with dressing forceps for foreign bodies, such as pieces of shoe, rubber boot, dirt or a splinter, is washed with ether and drained with rubber tissue. Since carbolic acid has been omitted I have noticed that few of these wounds suppurate. Carbolic acid is a powerful germicide, but very irritant. It causes necrosis of tissue, and suppuration. Tetanus is far more prevalent in wounds where suppuration, sloughing and necrotic tissues exist than in clean and incised wounds. Stick silver nitrate is in the same category as carbolic acid. It acts as an irritant and lessens tissue resistance. When silver nitrate is used to cauterize a puncture wound, or a poisoned wound caused by the bite of a human being, dog, cat, or other animal, it tends to seal the wound and to make drainage difficult.

ANTITOXIN.

Tetanus antitoxin is given far too seldom. We teach that it should be given in punctured wounds, wounds contaminated with street dirt or stable dirt, and gunshot wounds, wounds made by blank cartridges, and wounds in which there is extensive tissue destruction. It is given faithfully in gunshot wounds and punctured wounds; but, in other wounds of a nature calling for tetanus antitoxin, it is frequently neglected. Tetanus is a disease which possibly cannot be wholly eradicated by civil surgery, but, by the proper use of antitoxin, tetanus can be reduced to a minimum. The victory over tetanus in the late war was one of the triumphs of surgery. Again, it should be remembered that the experience in the late war proved that it is often necessary to repeat the administration of the antitoxin.

In what part of the body should the tetanus antitoxin be given? A case of punctured wound of the foot was reported to me for treatment a few days ago. Tetanus antitoxin had been administered in the tissues of the calf of the leg. The leg was badly inflamed and the patient lost a week from the occurrence of cellulitis.

It was formerly thought that tetanus antitoxin should be given as near the wound as possible. This belief is fallacious. When antitoxin is given in the tissues of the arm it frequently causes inflammation and cellulitis, with resulting incapacity. The subcutaneous tissues of the loin or abdomen are the least painful areas in which to inject antitoxin. In either of these areas the antitoxin is quickly absorbed, and there is but little subsequent irritation. Those who give antitoxin routinely often neglect to tell the patient of the possible symptoms which may follow the injection of antitoxin. These symptoms are occasionally gastrointestinal irritation, slight rise in temperature, and urticaria. If not warned in advance by the surgeon of the possibility of such conditions arising after the injections, patients often fear that such symptoms are indicative of oncoming tetanus.

A poisoned wound should be thoroughly washed with soap and water, then with ether, and then should be drained. The wound should never be sutured. In a previous article, stress has been laid on the virulence of a wound caused by a tooth cut. Policemen frequently receive such wounds. Over fifty per cent. of these wounds have been sutured without drainage before the patient reports to me. We have a number of officers whose hands are permanently crippled because of this practice.

DRAINAGE AND SUTURE.

Sufficient thought is not given to the question of drainage of wounds. Many wounds which should be drained are not drained when pus is present. A rubber tissue drain is more efficient than a gauze drain. Contused and lacerated wounds are sutured too frequently without drainage, and the sutures are often tied too tightly. This is especially true of contused wounds of the scalp. A drain made of rubber tissue, or of a few strands of silkworm gut, placed in the wound for twenty-four or forty-eight hours, frequently prevents subsequent cellulitis. A fireman recently sustained a contused wound of the scalp. This wound was not only sutured without drainage, but was sealed with collodion. Eighteen hours later there was a severe infection of the subaponeurotic area, necessitating multiple drainage. It is far better to use the old axiom, "When in doubt, drain."

Collodion is frequently abused by the first aid worker. Many contused and lacerated wounds of the scalp and many small but primarily infected wounds of the extremities are sealed with it. Severe infection frequently results.

BURNS AND SCALDS.

Burns and scalds should be classified under the heading of wounds. This suggestion is made with the idea that burns and scalds should be treated antiseptically, utilizing the same principles of surgery which apply to the treatment of wounds. Burns should not be treated with greases or pastes or with dirty preparation, as carron oil. A burn should be cleansed in the identical manner in which a wound is cleansed. The hairy portions of the skin surrounding a burn should be shaved. An anesthetic is often necessary to permit the proper cleansing of a burn. In a case under my observation at the present time, ether was administered every other day for a period of twenty-eight days, in order that the burned area and surrounding parts could be properly cleansed. The administration of the anesthetic prevents pain and subsequent shock. If the condition of the kidneys will not permit the administration of ether, nitrous oxide may be administered. Dupuytren's classification of burns should be taught. By understanding his six degrees, a burn may be better described and its pathology better understood.

All burned areas of the same patient, and very often all parts of the same burn, cannot be dressed alike. The principles of surgery must govern the treatment of each burn. For example, one portion of a burn may be granulating while another portion of the same burn is sloughing. The same treatment will not suffice for the two areas. Sloughs should be loosened with an antiseptic compress, then cut away. A healthy granulating area must be kept free from infection and pressure should be applied over the granulations. At each dressing care should be taken not to tear off the granulations. Paraffin gauze mesh or petrolatum gauze (which is more pliable) may be used for the purpose of protecting granulations. This gauze should be of wide mesh in order not to dam secretions and at the same time permit access of an antiseptic solution, if necessary. The petrolatum gauze is sterilized before being used. An infected burn can be treated by Dakin's solution if the patient does not find it too painful. At times this solution may be used with comfort; at other times, it causes severe pain. Dakin oil may be used. This is not as painful as the solution. If this oil is to be used daily, the strength should be one half of one per cent., or one per cent.

Dr. Hartwell, of New York, tells me that he is now using one half of one per cent. solution of acetic acid in the treatment of infected burns, and that the results have been most encouraging. The edges of the burn should be kept scrupulously free from all crusts. This important point has been emphasized in the discussion of the treatment of wounds. If this antiseptic treatment of a burn is carried out faithfully, it will be found that even after a burn of the fourth or fifth degree the scar will be soft and pliable; nor will there be the usual clawlike contractions, which so frequently follow burns.

The more virulent the infection, and the longer its duration, the greater will be the amount of fibrous tissue in the scar and therefore the greater will be the tendency to contract and deform. Rapid sterilization of an infected burn will be followed by a pliable scar and slight deformity. It is the contracting fibrous tissue which deforms.

Industrial dispensaries are growing in number. No one doubts their usefulness. Great care, however, must be used in order that the nonmedical individuals in charge of these dispensaries may not be given too much freedom in the treatment of injuries and the administration of drugs. Nominally, a surgeon is in charge, but he is not always present when cases are treated. No cases are treated in my office at the city hall unless a physician is present. This rule cannot be obeyed by all industrial surgeons, but care should be taken in the selection of the nurse or layman who is to act as the physician's deputy. This individual's duties should be clearly defined by the physician in order that he or she may not err on the side of overzealousness. None but a physician should attempt to cut away devitalized tissue. None but a physician should attempt to suture a wound. A physician alone knows the proper tension for sutures, or whether or not the wound requires drainage.

Another danger of our dispensaries is the promiscuous prescribing of drugs. Coal tar products are frequently dispensed without any knowledge of the patient's cardiovascular condition. Laxatives are given indiscriminately. Last summer three cases of appendiceal abscess came under my care. All three of these patients had been purged with castor oil. This oil had been given in industrial dispensaries. In each case the history was the same sharp abdominal pain followed by nausea and vomiting. Each had applied to his dispensary for treatment and had been given castor oil. The greatest care must be used lest the dispensary practise be abused.

CONCLUSIONS.

1. Great care should be taken in the selection of a lay person who is to be placed in charge of an industrial clinic, lest he or she usurp the prerogative of a physician in the overzealous treatment of wounds.
2. Minute observation and detail are necessary in the treatment of wounds to insure rapid convalescence.
3. Cleanliness and sane use of antiseptics are the essentials in the treatment of wounds. Antiquated applications of ointments and dusting powders should be procedures of the past.
4. A wound not amenable to local treatment requires more systematic study of the general condition of the patient.
5. Burns and scalds should be classified as wounds and treated according to the principles of surgery as the different conditions of the burn or scald may dictate.
6. Industrial plants should employ experienced physicians or surgeons, and should pay salaries commensurate with the responsibilities of the office. It is poor economy to employ a young and inexperienced physician or surgeon.
7. Industrial surgeons should be encouraged, rather than discouraged, to maintain affiliation with a hospital in order to keep up to date with surgical work.

Squamous Cell Epithelioma of the Skin.—Albert Compton Broders (*Annals of Surgery,* February, 1921), from a study of 256 cases, concludes as follows:

1. The term skin cancer is indefinite and should be discarded.
2. The use of the term cancerous degeneration also should be discontinued.
3. The capacity of a cancer to cause death should be known when a prognosis is given.
4. Cancer is a regenerative destructive process, resulting in the majority of instances from the interaction of anabolic and catabolic processes.
5. In most instances malignant neoplasia probably follows the chronic excessive destruction of differentiated cells.
6. As a rule, the more marked the differentiation in a squamous cell epithelioma, the lower is the degree of malignancy.
7. Pearly bodies and large flat squamous cells with small nuclei are not cancer. Cancer is regenerative or undifferentiated cells.
8. The 256 cases in this series of squamous cell epithelioma of the skin represent twelve and eight tenths per cent. of 2,000 cases of general epithelioma observed in the Mayo Clinic from November 1, 1904, to July 22, 1915.
9. Squamous cell epithelioma of the skin occurred more often in males than in females; the proportion is four to one. It occurred in patients past middle life; their average age was fifty-nine and thirty-four hundredths years.
10. Squamous cell epithelioma occurred most often in farmers; they represented fifty-three and ninety-six hundredths per cent. of the cases in males.
11. The site of the cancer was preceded by a mole, wart, pimple, scab, ulcer, leucoplakia, crack, wen, blister, or lump, in fifty-one and seventeen hundredths per cent. of the cases.
12. There was a history of injury in twenty-three and eighty-two hundredths per cent. of the cases; burns represented twenty-four and fifty-nine hundredths per cent. of the injuries, and x ray burns represented twenty per cent. of the burns.
13. The average duration of the lesion was four and eight tenths years, and the average greatest diameter three and eighty-five hundredths cm.
14. Seventy-eight and four hundredths per cent. of all the lesions occurred above the clavicle.
15. Twenty-eight and twelve hundreds per cent. of the patients were treated with acid, paste or plaster, and so forth, before they entered the clinic.
16. Twenty-six and ninety-five hundredths per cent. of the patients were operated on before they entered the clinic.
17. Ninety-two and eighteen hundredths per cent. of the patients were operated on at the clinic.
18. Regional lymph nodes or salivary glands were not removed in seventy-seven and ninety-six hundredths per cent.
19. Of the twenty-two and three hundredths per cent. of the cases in which the regional lymph nodes or salivary glands were removed, metastasis was demonstrated in sixty-one and fifty-three hundredths per cent.
20. The cervical lymph nodes were involved in

thirty-one and twenty-five hundredths per cent., submaxillary lymph nodes in twenty-eight and twelve hundredths per cent., the parotid lymph nodes in twenty-five per cent., the parotid salivary gland in twenty-five per cent., and the axillary and inguinal lymph nodes each in fifteen and sixty-two hundredths per cent.

21. In a classification of the epitheliomas according to cellular activity, graded one to four, Grade 1 represents eight and twenty hundredths per cent.; Grade 2, sixty-nine and fifty-three hundredths per cent.; Grade 3, seventeen and eighteen hundredths per cent., and Grade 4, five and seven hundredths per cent.

22. The average duration of the lesion, according to grade, was longest in Grade 2, five and thirty-six hundredths years, and shortest in Grade 3, three and two hundredths years.

23. The average size of the lesion according to grade was largest in Grade 4, five and four tenths cm., and smallest in Grade 1, two and nine hundredths cm.

24. Fifty-one and seventy-seven hundredths per cent. of the patients operated on and traced are dead, and forty-eight and twenty-two hundredths per cent. are alive.

25. Eighty-two and thirty-five hundredths per cent. of the living patients report good results, having been free from the disease on an average of seven and forty-four hundredths years.

26. Information received concerning the patients operated on who died, shows that sixty-five and fifty-one hundredths per cent. died of epithelioma.

27. Three (one and twenty-seven hundredths per cent.) of the patients who were operated on died before being dismissed from the clinic; the actual operative mortality was forty-two hundredths per cent.

28. Patients who were treated with pastes, plasters, and so forth, before entering the clinic, did not get such good total results as those who were not so treated, fifty-seven and fourteen hundredths per cent. in the former group and sixty-one and eleven hundredths per cent. in the latter; the total poor results were forty per cent. in the former group and thirty per cent. in the latter.

29. Ten and fifty-two hundredths per cent. of the patients with metastasis are living.

30. One of the two living patients who had metastasis reports a good result and one a fair result. In these patients the parotid lymph nodes and salivary gland on one side only were involved.

31. No patient with cervical lymph nodes or more than one group of any lymph nodes involved has been reported living.

32. All the patients reported dead who had metastasis died of epithelioma.

33. Sixty per cent. of the patients operated on in whom no metastasis was demonstrated are living, all with good results, and forty per cent. are dead.

34. Sixty-six and sixty-six hundredths per cent. of the patients reported dead who did not have metastasis died of epithelioma.

35. Fifty-three and fifteen hundredths per cent. of the patients operated on, in whom no regional lymph nodes or salivary glands were removed, are living, and forty-six and eighty-four hundredths per cent. are dead; eighty-one and thirty-five hundredths per cent. of the living report good results.

36. Fifty-four and seventy-six hundredths per cent. of the patients reported dead, in whom no regional lymph nodes or salivary glands were removed, died of epithelioma.

37. The total good results for the patients with metastasis are six and sixty-six hundredths per cent.; for those without metastasis, seventy-seven and seventy-seven hundredths per cent., and for those in whom no regional lymph nodes or salivary glands were removed, sixty-six and thirty-three hundredths per cent.

38. The total poor results without regard to grade for the patients with metastasis are eighty-six and sixty-six hundredths per cent.; for those without metastasis, twenty-two and twenty-two hundredths per cent., and for those in whom no regional lymph nodes or salivary glands were removed, twenty-five and seventy-four hundredths per cent.

39. The average duration of the lesion in the patients with metastasis was two and sixty-seven hundredths years; in those without metastasis, five and three hundredths years, and in those in whom no regional lymph nodes or salivary glands were removed, four and seventy-eight hundredths years.

40. The average size of the lesion in the patients with metastasis was six and three tenths cm.; in those without metastasis, four and fifteen hundredths cm.; and in those in whom no regional lymph nodes or salivary glands were removed, three and eight hundredths cm.

41. The known causes of deaths from epithelioma were: Grade 1, none; Grade 2, sixty-one and twenty-nine hundredths per cent; Grade 3, eighty-five and seventy-one hundredths per cent., and Grade four, one hundred per cent.

42. The total good results for Grade 1 are ninety-two and eighty-five hundredths per cent.; Grade 2, sixty-five and forty-three hundredths per cent.; Grade 3, forty-one and sixty-six hundredths per cent., and Grade 4, none.

43. The total poor results for Grade 1 are none; Grade 2, twenty-five and ninety-two hundredths per cent.; Grade 3, fifty-four and sixteen hundredths per cent., and Grade 4, one hundred per cent.

Etiology and Prophylaxis of Lethargic Encephalitis.—A. Netter (*Bulletin de l'Académie de médecine,* March 8, 1921), in a joint report to the Academy, concludes that when the present epidemic of this disorder comes to a close, the disease will continue to occur in isolated sporadic cases. With but few exceptions past epidemics of lethargic encephalitis have been most pronounced in the cold season of the year. Although coincident with influenza, both recently and in 1890, lethargic encephalitis is a different disease from the latter; infection generally takes place in the nasal cavities and their prolongations, and dissemination occurs particularly in the mouth and pharynx. The disease is generally met with in single cases or small groups in families, but is actually a transmissible disorder, infection of other persons occurring from either patients or convalescents. The high resisting powers of the virus, demonstrated by the prolonged course of the disease and the frequency of relapse, explain how certain subjects may transmit the disorder several months or years after the onset. Encephalitis may likewise be propagated by apparently normal persons who have been in proximity to patients. No history suggestive of an attack of encephalitis at any previous time is obtained from these persons. The presence of the virus in the oral and nasal secretions does not definitely exclude the possibility of clothing, towels, etc., as agencies in the propagation of the disease. Quarantine, as in influenza, cannot be counted on to check the spread of the disorder in any given territory. The attempt should be made, however, to prevent transmission to associates by isolating the patient. Such isolation should be kept up during convalescence, but the duration of isolation cannot be definitely stated, as encephalitis may persist a long time and exhibit relapses after months or years. Contact with persons who have been in proximity to a patient should be avoided. Disinfection of the rooms and clothing of encephalitis patients is advisable. The partial incomplete cases may, perhaps, play a more important part in the propagation of the disease than the manifest, pronounced cases.

Treatment of Loose Bodies in Joints.—A. G. Timbrell Fisher (*British Journal of Surgery,* April, 1921) gives the following treatment for loose bodies in the joints:

The treatment in the case of the traumatic loose bodies and of the synovial chondromata is, in most cases, removal. In the former group, provided the aseptic technic is beyond reproach, the results are naturally good, since they usually occur in a joint that is otherwise normal. However, if the traumatic loose body has been allowed to remain in the joint long enough to cause a chronic villous synovitis or commencing osteoarthritis, although we may cure the sudden attacks of pain due to the body becoming impinged between the articular surfaces, yet the operation may be followed by pain, swelling, and a feeling of weakness in the joint due to the superimposed condition. This forms one argument for early operation, another being that the presence in a joint of a loose body is a source of danger, as when a loose body suddenly becomes impinged between the articular surfaces of the knee when crossing a crowded street. These propensities of loose bodies also interfere with athletic pursuits.

In the case of the pathological loose bodies in osteoarthritis, an operation is usually indicated in young or middleaged people when troublesome locking occurs, and when the joint is not seriously disorganized. The operation has naturally no effect on the course of the disease, and is of a palliative nature. The results of operation in the synovial chondromata are also good, provided the condition is not progressive, for the process may end as suddenly and mysteriously as it commences. If we are lucky enough to operate when the process has come to an end, the result is generally good; if not, further operations may be required.

Any operation for removal of a loose body or bodies should be preceded by an x ray examination taken in two planes, from which we may learn how and where to open the joint. An x ray is only helpful when the loose body contains bone. In every case our incision through the skin and capsule should be liberal, in order to explore the joint as thoroughly as possible. To transfix and remove the loose body through a buttonhole incision is an unscientific procedure reminiscent of preantiseptic days, for, unless we explore the joint, we are very apt to overlook other loose bodies or coexistent conditions which may give rise to a recurrence of the symptoms.

Silver Permanganate in Gonorrhea.—P. Gallois (*Presse médicale,* January 5, 1921) recommends the use of silver permanganate in a one in ten thousand or twenty thousand solution for free local irrigations in gonorrhea. The solution exhibits the same purplish color as that of potassium permanganate, with an added slight opalescence due to the presence of the silver. The solution is somewhat more caustic than that of the latter salt, but seems more active therapeutically, on account of the silver. Its superiority over potassium permanganate is especially manifest in the abortive treatment of gonorrhea, in which irrigations are administered during the first twenty-four hours after appearance of the discharge.

Late Results of Maydl's Operation for Exstrophy of the Bladder.—Nové-Josserand (*Presse médicale,* January 5, 1921) reports the late results in three cases in which Maydl's operation had been performed twenty-one, seventeen, and twelve years before, respectively. The patients were found in good health and were free from signs of irritation of the rectum and of infection of the upper urinary passages. All were continent in the daytime, though at night continence was inconstant. In view of these favorable results, the author believes Maydl's operation should not be discarded. The procedures of Cunéo and Heitz-Boyer for the formation of an artificial bladder are more complicated and attended with greater risk, yet do not yield better continence nor reduce the risk of infection of the kidneys.

The Treatment of the Third Stage of Labor.—R. von Fellenberg (*Schweizerische medizinische Wochenschrift,* February 10, 1921) recommends routine intramuscular injections of pituitary extract immediately after completion of the second stage, and independently of whether such an injection has been administered previously or not. In the course of about ten minutes the placenta is expelled into the vagina. The author has never known this method to fail during seven years of practice. His cases included patients who had suffered severe postpartum hemorrhages in previous labors, and others where pituitary extract had failed to stimulate a sluggish uterus so that forceps had to be applied. Even in cases of retained placenta some time after labor, the method yielded gratifying results. The author emphasizes the prophylactic value of his suggestion, as opposed to the frequent use of injections of pituitary extract when hemorrhage has already set in. He further urges a routine injection of an ergot preparation at the end of labor.

Nitrous Oxide Anesthesia.—E. I. McKesson (*American Journal of Surgery,* October, 1920) presents the following conclusions:

1. Primary saturation of the patient with nitrous oxide fails in some cases to produce sufficient relaxation for certain operations.

2. Nitrous oxide produces muscular relaxation when it is sufficiently concentrated in the tissues and associated with enough oxygen to prevent anoxemic rigidity. High concentration of this gas in the tissues is required to displace the nonanesthetic diluting gases.

3. The technic of secondary saturation intensifies nitrous oxide anesthesia and produces sufficient relaxation for any operation.

4. Secondary saturation is readily lost by subsequent errors in the mixture administered, leaks of air into the patient's air passages, and probably by absorption of air through the abdominal cavity and skin, requiring occasional resaturation in some cases.

5. Its successful and safe employment depends upon an apparatus capable of inflating the lungs with oxygen, should the patient be crowded intentionally or accidentally into spastic apnea. It depends also upon an accurate interpretation of the signs of anesthesia, but disregarding the presence or absence of cyanosis as an anesthetic sign.

6. Secondary saturation is followed by no postanesthetic sequelæ—which are detrimental or which may be attributed to its use. I believe it is safer for the patient than an ether sequence or combined gas oxygen—ether mixture and convalescence is decidedly better when even the small amount of combined ether is avoided in the narcosis.

Helminthiasis and Dysmenorrhea.—G. Léo (*Bulletin de l'Académie de médecine,* March 8, 1921), states that the presence of worms, especially oxyuris and ascaris, is capable of causing pelvic pain during the menstrual periods. A reliable sign of helminthiasis is the "tongue sign" recently described by Couillaud, characterized by enlargement of the fungiform papillæ of the tongue, which become visible to the naked eye as red spots at the tip or margins of the tongue. When a patient shows the tongue sign and painful dysmenorrhea in combination, treatment for worms not only causes reduction or disappearance of the tongue sign but also removes the dysmenorrhea. If the tongue sign returns thereafter, recurrence of the parasites and of pain during menstruation is correctly foreshadowed. In some of the author's cases the treatment instituted consisted of small enemas of tepid salt water and santonin and calomel by mouth for three or four days. Later, in conformity with Loeper's therapeutic recommendation for oxyuriasis, bismuth subcarbonate was given internally. Each of the eight women thus treated for a few months were relieved of their menstrual distress. In one typical case, a patient who had had dysmenorrhea from the age of fourteen years to thirty-six years had her first painless menstruation the same month that the anthelminthic treatment was started. Ascaris and many specimens of oxyuris were expelled by this treatment. The treatment for worms was constantly effective in cases exhibiting a combination of the tongue sign and dysmenorrhea.

Babcock's Operation for Varicose Veins.—G. H. Colt (*British Journal of Surgery,* April, 1921) concludes that:

1. Babcock's extraction operation, in cases taken early, results in removing the whole of the internal saphenous vein, with up to about three inches of each of its tributaries, through two small incisions, in twelve minutes.

2. The extraction operation combined with local excision of all the tributary junctions of the external and internal saphenous systems, and the extraction or excision of the external saphenous vein, should be regarded as the operation of choice in ordinary cases, if the symptoms are to be relieved for long periods.

3. No bad results are directly attributable to the extraction part of the combined operation.

4. Further information is required as to the frequency of occurrence of duplication or partial duplication of the internal saphenous vein.

5. An investigation by a plethysmographic method of the relationship between symptoms and the carrying capacity and retarding effects of the superficial and deep veins is called for.

Nutritive Value of the Proteins of the Barley, Oat, Rye, and Wheat Kernels.—Thomas B. Osborne and Lafayette B. Mendel (*Journal of Biological Chemistry,* March, 1920) report their studies on the growth rate of rats on diets which were comparable except in respect to the content and source of the cereal proteins contained in them. This comparative study of the nutrient efficiency of the entire proteins of barley, oat, rye, and wheat kernels shows that on the whole these four cereals do not differ much in their ability to promote growth. In contrasting the different groups of rats from the viewpoint of their subsequent history, the barley-fed animals appear to have grown a little the best, but the experiments show the possibility of normal growth for long periods where no proteins other than those furnished from the cereals are supplied.

Endoscopy.—Charles Johnstone Imperatori (*American Journal of Surgery,* October, 1920) asserts that in order to perfect one's technic in endoscopy, continued practice is essential. An occasional endoscopist can do great damage to the parts, and even cause death. The marked difference of the laryngeal picture between the direct and the indirect method is such that one unaccustomed to this newer method can hardly appreciate the true condition, either normal or otherwise, that is present. While the mechanical manipulations of the various instruments and apparatus require practice, the eye must be repeatedly viewing the internal structures of the larynx, trachea or esophagus in order to appreciate the findings, normal or pathological. Parenthetically, the contention of the older laryngologists that the indirect method has become a lost art is hardly true, for this method will always be practised. The common notion regarding endoscopy is to intimately associate it with the removal of foreign bodies. While this is certainly a brilliant and spectacular procedure, still the use of endoscopy, other than operative, as a means of diagnosing and treating diseases of the upper air passages and esophagus, is assuredly an advance in medical progress.

Oral Infection.—Henry A. Cotton (*International Journal of Surgery,* April, 1920) concludes as follows:

1. The doctrine of focal infections has passed the pioneer stage, and is now recognized by the most progressive men of the medical and dental professions.
2. Oral infection (teeth and tonsils) is the most constant factor in the insane.
3. The primary focus undoubtedly is in the teeth and tonsils, and these constitute a portal of entry of infection into the system. Secondary foci are found in the stomach, duodenum, small and large intestine, gallbladder, appendix, cervix uteri and appendages in the female, prostate and seminal vesicles in the male.
4. Radical measures, viz., elimination of infection from teeth and tonsils, is imperative; extraction of all infected teeth and enucleation of infected tonsils.
5. Surgical procedures are adopted for the elimination of secondary foci of infection where possible: Excision of the gallbladder, removal of the appendix, enucleation of the cervix, removal of infected tubes and ovaries, excision of the seminal vesicles, and resection of infected areas in the colon.
6. Where surgery cannot be utilized, the treatment of infection of the stomach, duodenum and small intestine is accomplished by means of autogenous vaccines and antiserums.
7. The various strains of both hemolytic and nonhemolytic streptococci and pathological strains of colon bacillus are found to be the offending organisms in producing psychoses.
8. The elimination of focal infection in the insane has increased the discharges from forty to between seventy and eighty per cent., in spite of the fact that the alcoholics now furnish only three per cent. of the discharges, instead of twenty-seven per cent. as formerly.
9. Educational campaigns are necessary to acquaint the public, as well as the medical and dental professions, with the significance of local infections in the causation of diseases.
10. Proper recognition of this important subject will not only restore patients who have become insane, but early recognition by both dentists and physicians will prevent a large proportion of these cases where a psychosis develops later.

Oral Anesthesia.—A. Ficklen (*American Journal of Surgery,* October, 1920) states that: Ether, chloroform and liquid petrolatum, when swallowed in the quantities stated, produce a safe general analgesia, accompanied in nearly all cases by light anesthesia. Vomiting occurs in a small proportion of cases. Alarming symptoms have never been observed. The effects of the drugs are intensified and prolonged by the administration of morphine. The ether oil mixture is not as powerful as the formula to which chloroform has been added. This conclusion is reached by comparing the case reports of Dr. Gwathmey and Dr. Karsner with my own. The field of usefulness of the procedure should be broadened. Enough cases have already been observed to show that it is of value in painful dressings and as a supplement to general anesthesia. It has not been used, so far as I have been able to ascertain, in gynecological examinations where relaxation is necessary, in suspected malingering, and in manipulation of ankylosed joints. Since the method is yet in its infancy, further tests should be made to determine its status in surgery, and these suggestions are made with this in view.

Regional Anesthesia.—Gaston L. Labat (*Annals of Surgery,* February, 1921) states that nerve blocking may be accomplished by four methods, the judicious combination of which meets the purposes of any operation:

1. Blocking the nerve terminals in the immediate vicinity or around the operative area.
2. Blocking the nerves at any point from the spine or skull foramina to the area they supply. The nerves are more accessible in the superficial layers in the immediate vicinity of fixed landmarks. When the anesthetic solution is injected close to the spine, the method constitutes paravertebral conduction anesthesia, the Laeven method.
3. Blocking the roots within the spine, but outside the dura mater; called the extradural, epidural or sacral method.
4. Blocking the roots within the dura, known as the intradural or spinal analgesia.

Psychic Management of Persons with Cardiac Disorders.—The proper way to look at a structurally defective heart, Robert H. Babcock (*Journal A. M. A.,* April 16, 1921) says, is from the point of view of its present potential efficiency and its future likelihood of remaining functionally competent. If good compensatory hypertrophy is present and, still better, if the leak is so slight as to have caused no appreciable enlargement, the patient may usually be dismissed with the assurance that he need only protect his heart against further damage through neglect of focal and acute infections, evil habits and unwise physical strain. The foregoing applies particularly to cases of mitral and aortic insufficiencies. Stenosis, on the other hand, and especially mitral stenosis of the second and third degree, do not present so encouraging a prospect. Yet, even in such cases, almost no greater harm can be done than to instil the element of fear, since physical limitations can be stated without frightening the patient nearly to death or making a hypochondriac out of him. On the other hand, a part of the proper psychic management of some of these cardiopaths is to impress frivolous or light minded patients with the necessity of moderation in all their habits of life. The diagnosis of organic heart disease is not necessarily tantamount to pronouncing a sentence of death in the near future, or even death from the cardiac lesion *per se.* Many a person has carried a valvular defect from early life to old age. With the exception of stenosis of pronounced degree, the prospect of life is relatively good as regards the results of rheumatic endocarditis, provided the myocardium has escaped damage, and there are no complications that still further handicap the heart. Therefore, we are not justified in giving a pessimistic prognosis simply because we perceive a murmur. If subjective symptoms are wanting and no secondary effects are present, we may, in most instances, dismiss the patient with reassuring words as to any immediate danger.

Miscellany

Atypical Form of Arteriosclerotic Psychosis.—S. Uyematsu (*Journal of Nervous and Mental Disease,* December, 1919) reviews the different forms of pathological changes produced by a sclerotic condition of the cerebral arteries. Bulbar symptoms and perivascular gliosis, wedge formed arteriosclerotic degeneration of the cortex, encephalitis corticalis and vacuole formation in subcortical white matter, the *état vermoulu Pierre Maries* of Rossbach, and finally spongy degeneration of the cortex of the brain may all come under the heading of a typical arteriosclerosis. The difference in forms may be explained by the different locations and degrees of sclerosis, since the alterations are thought to be due to sclerosis of the cerebral arteries.

The case reported by the author presented a negative history up to seven or eight years before the onset of the condition. The patient, a woman, forty-eight years of age, began to fail seven or eight years before admission to the hospital, and complained of constant headache, which gradually became more severe during the last year. During this time her memory became impaired, she was disoriented, showed stereotyped conversation and echolalia. Pupils were irregular and unequal, reacting slowly to light; no accommodation. Exaggerated knee jerks, ankle clonus on right side, tremor of the hands, tongue and lips. Speech was retarded. No history of hemorrhage, but she had been unable to walk during the past year. There was a clawlike contraction of the hands, the right especially, and beginning gangrene of fingers and toes at the time of her death. The symptoms bore a resemblance to those of general paralysis, but the course was too prolonged, and a negative Wassermann reaction militated against this diagnosis. The increasing headache and focal symptoms led to a tentative diagnosis of brain tumor.

Autopsy showed sclerosis of the coronary vessels, beginning sclerosis of the aorta, etc. The brain, weighing 970 grams, was extremely atrophic; at the point of greatest atrophy it had a motheaten appearance. The atrophy of the convolutions was related to the sclerotic brain arteries. Small softenings were present, and evidence of an old hemorrhage in the internal capsule on the left side. The atrophy seemed, accordingly, to be related to the arteriosclerosis of the cerebral vessels. Microscopic examination showed arteriosclerosis, the degenerative process of the cortex described by Fischer as *spongioeser Rindenschwund* was particularly apparent. This form of alteration had four varieties, cystic degeneration of the cortex, packet formation of the vessels, scar tissue formation where the surface of the cortex was sunk below the normal level, and finally the disappearance of the cell element, especially Purkinje cells and the small round ganglion cells of the granular layer.

The author describes the very few reported cases of this rare condition of spongy degeneration of the cortex in an attempt to trace characteristic symptoms that might serve to identify the arteriosclerotic psychosis. According to one observer the onset of the disease is usually in the sixth decade. It begins with headaches, loss of memory, listlessness, irritability, and gradually increasing dementia, which develops more slowly than a general paralysis. Delusions and hallucinations of transitory nature are sometimes found. One symptom of interest is the insight into the condition which is kept even in the later stages. Less common symptoms are loss of accommodation to light, speech disturbances, tremor of the hands, lips and tongue, and disturbances of handwriting and gait. In Uyematsu's case, and in some others described, the age of the patient was less than the typical age. In the author's opinion, the etiology of arteriosclerosis in the cerebral arteries of relatively young persons is very obscure and difficult of explanation.

The paper is concluded with the following summary of the outstanding features of this case:

1. Clinical paralytic symptoms, with negative Wassermann reaction in blood and spinal fluid.
2. Constantly increasing headaches and focal symptoms, suggestive of brain tumor.
3. Autopsy disclosed atrophic brain, motheaten in appearance.
4. Sclerotic major arteries of the brain.
5. A peculiar spongy degeneration of the cortex, attributed by the writer to the result of malnutrition caused by the sclerotic brain arteries, was observed.
6. An old hemorrhage, evidencing the arteriosclerotic nature of this atrophy, and having a probable bearing upon the ankle clonus of the right side, and the clawlike position of the right hand.
7. The paralytic symptoms are believed to be the expression of the progressive and profound wasting of the cortex, a process resembling that of the wasting of general paralysis.

The Modern Explanation of the Toxicoses of Pregnancy.—Paul Huessy (*Schweizerische medizinische Wochenschrift,* October 7, 1920) has written a very long and rather dull paper on this subject, extending over several numbers of this journal in a veritable German *cacoethes scribendi,* but presenting one redeeming feature, a rather snappy summing up in a few lines. He claims that all the various pathological pictures so carefully painted are only separate symptoms of pregnancy intoxication induced by the entrance of proteinogenous amines, or of their cleavage products, into the circulation. The amines come partly from the intestine, partly from the placenta, and partly from the endocrine glands, especially the pituitary adrenal system and the thyroid. But the constitutional predisposition of the organs certainly plays an extremely important part. If the organs which inactivate these amines fail to function early, the amines are not broken up, or are broken up insufficiently, and the poisoning is much worse than when these organs are harmed slightly or not at all, as is the case in normal pregnancy.

Extraabdominal Causes of Acute Abdominal Pain.—James H. Smith (*Virginia Medical Monthly,* March, 1921) states that when the local signs in the abdomen are not in keeping with the abdominal pain present, an extraabdominal origin should be suspected. If fever exists, one may suspect a pulmonary lesion or an infection in the urinary tract, or in young people especially, rheumatic or other general infections. In afebrile cases, one should investigate the spinal cord, the possibility of metallic poisoning, the urinary tract, and in middle aged or elderly subjects, the vascular system. The preoperative routine should include examination of the urine and of blood smears, and a leucocyte count. X ray studies are very useful in determining the condition of the urinary tract and spine. Not all intraabdominal causes of pain are surgical; on the other hand, the known presence of extraabdominal disease does not exclude the possibility of intercurrent trouble within the abdomen.

Experimental Inoculation of Human Throats with Avirulent Diphtheria Bacilli.—W. L. Moss, C. G. Guthrie, and B. C. Marshall (*Bulletin of the Johns Hopkins Hospital,* February, 1921) report experiments on five healthy subjects which confirm their previous work with healthy diphtheria bacillus carriers. No difficulty was encountered in producing the carrier state with avirulent diphtheria bacilli. This state lasted for a long time. The inoculation of these bacilli did not produce clinical diphtheria, any subjective symptoms or any objective change in the appearance of the throat. The previous administration of diphtheria antitoxin subcutaneously did not prevent the lodgement and growth of the organisms. Spraying the nose and throat with gentian violet in a strength which could be tolerated was without effect in eradicating the avirulent diphtheria bacilli. The carrier of avirulent diphtheria bacilli does not constitute a menace to the health of the community.

Botulism—A Clinical Study of an Outbreak in the Yukon.—J. A. R. Glancy (*Canadian Medical Association Journal,* November, 1920) reports a number of cases, several of which proved fatal. The poisoning was probably caused by the ingestion of cold storage beef. The symptoms were typically those of the toxin of Bacillus botulinus. Seven patients died within six days, and five within eleven days after eating the poisonous food; in all, death was due to respiratory failure. Recovery was apparently complete in all who survived, as there were no persisting symptoms or signs eight months after the poisoning. The length of time before symptoms manifested themselves varied from twenty-six hours to five days; in those who died from twenty-six to thirty hours. The right side was affected to the greater extent in almost every case. The forearms were affected to the greater extent, the left in a general way, the right in distinct muscle groups, the weakness of the extensors of the forearm and hand being common to almost every case. There were no griping pains in the abdomen; vomiting and diarrhea were not common symptoms. There was little deviation from normal in either temperature or pulse rate, except immediately before death. Good and bad periods occurred with a somewhat regular irregularity. Both the extrinsic and the intrinsic eye muscles were affected. The patients, including those who died, had perfect control of mentality at all times. When headache occurred it was usually occipital; when parietal it was usually left sided. Of those who survived there was only one who had extreme difficulty in breathing, and the feeling of suffocation was extreme for a long period; this patient also had intense pain over the aortic and pulmonary areas at the base of the heart.

A purgative was given as soon as the patient was seen, and an enema was usually given, whether the purgative was effectual or not. An emetic was given in the majority of cases; gastric lavage was used in one or two instances with rather unsatisfactory results. Then stimulation was begun, consisting of one thirtieth of a grain of strychnine every three hours, nitroglycerine compound, and a brandy saline enema (one part of brandy to four of saline) every four hours. Interstitial salines were given, also camphor and ether hypodermically. No permanent benefit was obtained from artificial respiration or oxygen inhalations. Patients severely affected could not take even liquid diet, and these were given nutrient enemata frequently. When the patient could swallow fluids, he was given broths, whites of eggs, milk, brandy, and champagne. In the less serious cases the patients were allowed to eat almost anything that they could swallow without too great difficulty.

Unusual Symptoms Caused by Cerumen.—Julius Kaunitz (*Journal A. M. A.,* August 21, 1920) reports the interesting case of a patient seventy-three years old who suffered for twelve hours from nausea, vomiting, diarrhea, vertigo and weakness. When seen she was lying on her right side; any attempt to turn the head to the left immediately brought on most distressing giddiness, nausea and weakness. Sitting and standing could be maintained only with the greatest effort, and always with the head and body inclined to the right. Walking was of a staggering nature and support was necessary. Distinct lateral nystagmus appeared when looking to the left, but not when looking to the right. Recent ear trouble was denied. Examination, however, disclosed a thin disc of wax one quarter of an inch in front of the drum. When punctured immediate relief from all distressing symptoms resulted. The nystagmus also disappeared.

Lead in the Urine in Neurocirculatory Disturbances.—C. A. McDonald and Henry McCusker (*Boston Medical and Surgical Journal,* November 4, 1920) report twelve cases which represent nervous disorders of many types. Not one of them showed signs of lead poisoning, such as the lead line, anemia, or stippling. It was only by making a routine urinary examination for lead in doubtful cases that the lead element was discovered. The cases are reported to stimulate corroboration or refutation of Chapman's standard that four tenths of a milligram of lead per litre of urine is sufficient to cause symptoms, and also to argue for the consideration of lead as the etiological factor, or one of the etiological factors, in obscure cases presenting neurological signs and symptoms.

Iodoform Psychosis and Its Position Among Exogenous Predilection Types.—G. Ewald (*Monatschrift für Psychiatrie und Neurologie,* March, 1920), finding that no study of an iodoform psychosis from the psychiatric point of view has been made, describes in detail a case occurring in the Erlangen Surgical Clinic. The patient, an undernourished lad, aged eighteen, with negative family history, had first an empyema after pneumonia accompanied by grippe. Before operating the second time for the empyema, a digitalis cure was instituted in view of his extreme emaciation. The wound was first tamponed with vioform gauze, then tampons of iodoform gauze were applied twice, whereupon signs of acute poisoning, with convulsive twitchings, turning upwards of the bulbi and flickering of the lids became apparent. Violent grimaces were made and distortion of the mouth, exaggerated motions of the face and nose appeared. Traces of iodine were found in the urine for two weeks. During this time an acute psychosis, with loss of orientation, difficulty in concentration, persecutory thoughts, emotional disturbances and indications of echolalia pursued its course and gradually wore off as the traces of iodine disappeared.

The same iodoform gauze had been used in the clinic for many dressings without ill effect, and even in this patient had been used several times before. The patient had had no psychopathic traits in his youth. The intolerance may have been the result of his weakened condition.

Prognostic Significance of a Rapid Fall of Blood Pressure in Angina Pectoris.—R. Lutembacher (*Presse médicale,* January 5, 1921) notes that Vaquez describes two forms of angina pectoris, the first being angina on exertion, unattended by any disturbance in the breathing, cardiac rhythm, or blood pressure, the pain in which is due to inflammatory irritation of the nerve filaments surrounding the aorta or coronary arteries. The second form is decubital angina, attended by symptoms of acute dilatation of the heart, including pulmonary edema, increased heart rate, and blood pressure disturbance. In the more severe instances of the latter form, Lutembacher has been struck by the extreme tachycardia, weakness and inequality of the heart beats, a pronounced drop in blood pressure, and sudden cessation of the anginal pain. This type is met with in high pressure subjects, with or without aortitis. Such patients are in the habit of using nitroglycerin to relieve their pain, are afraid of exposure to cold on account of the peripheral vasoconstriction it causes, and often live in overheated rooms. The final, fatal attack regularly follows exposure to damp cold or rain. The patient returns home complaining of severe pain, which he attempts to relieve by rest and nitrites, but without success, the pain continuing for several hours or intermitting temporarily before the final, fatal paroxysm. In these cases the systolic blood pressure is sometimes found to drop from 250 or 280 millimetres of mercury to eighty or ninety, nearly always after the pain has already been present for some hours and is beginning to subside. Where the final attack occurs only a day or two after the exposure to cold, a progressive, staircase, premonitory descent of blood pressure may be noted, which is always of unfavorable portent. When the pain subsides the patient is likely to fall asleep a few moments, then wakes and complains of choking, though suffering no pain. At this time the heart rate is 150 to 200 and most of the beats are so weak they do not reach the radial pulse. Pallor and syncope close the scene. The condition responsible is probably a sudden dilatation of the heart muscle following painful distention of the organ. In the less severe cases of decubital angina, dilatation is actually demonstrable by fluoroscopy as well as indirectly by the appearance of valvular murmurs. In the serious cases some additional event, such as hemorrhage due to subpericardial rupture of a coronary vessel or coronary thrombosis, seems necessary to account for the sudden, insuperable weakening of the myocardium. In a case of this type which came to autopsy the aorta and coronaries showed longstanding and deepseated changes indicative of subacute arteritis and in addition the left coronary artery was blocked at its entrance by a clot of fibrin.

An Analytical View of the Basis of Character.—Constance Long (*Psychoanalytic Review,* January, 1920) presents her discussion on the narrower basis of sex because in the unconscious this factor occupies so large a place. At puberty and during adolescence the libido presents special problems in its various sexual divisions. Sex manifests itself in threefold form. The first is the autoerotic form which produces on the phantasy side selfindulgence, on the reality side selfrealization. Homosexuality is the second form and has its important place in work and play, but by clumsy handling and ignorance may become forced into an unsocial fixation. Both of these forms continue to exist to some extent in a more childish form under repression and may under special stress break out pathologically. Heterosexuality is always present, even in the child pushing itself toward maturity. It is subject to blockade because of too passionate devotion first to the parent, but its development depends upon the successful experiencing and surpassing of each successive stage of object finding.

Cardiospasm.—J. Russell Verbrycke (*Southern Medical Journal,* April, 1920) divides treatment into medical mechanical and surgical. Most first stage cases and some in the second stage are relieved by medical treatment, or removal of the cause without local treatment. The cause when determined should be removed. Mild or transient spasms of not too long duration often cease them, whether the cause was nervous, reflex, irritative, or toxic. All irritating food must be avoided. The general health should be built up by regulation of rest, exercise, mental and physical habits, and baths. Mineral oil is useful, belladonna is valuable in general vagotonic cases, but disappointing in others. Silver nitrate is useful if any fissure or abrasion is suspected. Forcibly overstretching the spastic muscle is indicated in practically all severe cases. This may be done by bougies, expanding metal blade instruments, air pressure dilators, and water pressure dilators. Surgical treatment, gastrostomy, is indicated only in nearly moribund patients as a temporary measure to get food into the system.

Pathogenesis of Migraine.—Rémond and Rouzaud (*Bulletin de l'Académie de médicine*, December 28, 1920) report investigations on the urine and blood in forty-eight cases of migraine in the intervals between their attacks. The viscosity of the blood was found generally increased, the average being 5.3 as compared to the normal 4.2. The diastolic blood pressure was generally high and the pulse pressure reduced. The blood urea was increased above the normal, 0.35, to an average of 0.468. Balavoine's ureosecretory coefficient was below normal, showing reduced renal permeability and output in all these cases. The residual nitrogen in the blood plasma was increased above the normal 0.100 to an average of 0.129, and the uric acid content averaged 0.166, as against the normal 0.12. The blood sugar was about normal, except in two cases attended with slight glycosuria. The cholesterin in the blood was constantly increased, from the normal 1.50 to an average of 2.12 and a maximum of 3.03. The increase of residual nitrogen, uric acid, and cholesterin definitely point to deficient activity of the liver cells, while the increased blood urea and low Balavoine coefficient point to insufficiency of the renal cells. In uncombined hepatic or renal disease, however, the authors have never noted migraine. The latter is, therefore, apparently the result of combined hepatic and renal functional inadequacy. It may be looked upon as the expression of a gradually increasing intoxication, causing euphoria at first, later pain and defensive manifestations such as anorexia and vomiting, and involving particularly the nervous system, including the sympathetic and vasomotor structures.

Walling Off the Subarachnoid Spaces.—Fernand Lemaitre (*Annals of Otology, Rhinology and Laryngology*, March, 1920) mentions the fact that while every endocranial operation comprises three stages, the passing of the meningeal barrier is the eminently dangerous point, because of the arachnoid spaces. However, with the suppression of these, the prognosis becomes less grave. By transforming the meninges into a fibrous coat, the desired result may be accomplished. The technic is to push a Pravaz needle through the meninges and into the brain in the direction of the suspected abscess. When a drop of pus escapes through the needle, indicating that its point is in the abscess, the needle is replaced and the opening slightly enlarged by introducing a groove director alongside of the needle. A drain of very small calibre, almost filiform, is then introduced along the channel of the director and without tearing the meningeal breach. The drain, which also tends to create meningeal adhesions, is left in place twenty-four to forty-eight hours. The fact that the meninges about the drain are changed to a fibrous covering has been constantly found in cases afterward carefully examined and studied.

At the first dressing in a day or two, the opening may be enlarged by using a slightly larger drain, or by incising for one or two millimetres the fibrous ring about the drain, care being exercised not to go beyond the fibrous thickening in the meninges. The enlarged drain thus introduced continues to drain the abscess and also to act as a foreign irritant about which and for some distance away the meninges undergo a fibrous change. The dressing is repeated daily for about a week, each time a drain is used of larger size which tends to enlarge the meningeal opening, increase the fibrous area and thus gradually eliminate the arachnoid spaces from the drainage channels. Meningitis and hernia, two serious complications, both frequent and dangerous, which nearly always follow incision of the meninges, are thus avoided.

Status of the Luetin Test.—Louis Hannah (*Medical Record*, September 25, 1920) reports a disappointing experience with this test owing to the frequency of false reactions in cases where mercury or especially iodides had been administered. Thirty cases of such false reactions reported to Noguchi referring to the administration of mercury brought the reply that certain investigators had reported these pseudo-reactions after the ingestion of potassium iodide. Noguchi recognizes a distinction between the real and false reactions in that the former seem more delayed. Hannah concludes that it is too nearly impossible to differentiate the true reactions from the false to make the test of any value.

Coccidiodal Granuloma.—Kenneth M. Lynch (*Southern Medical Journal*, April, 1920) describes a case of this disease, which, he states, is the forty-fifth on record, the second in a woman, the fourth not in California, and the first east of the Mississippi River. The disease is likely to be confused with tuberculosis. The parasite is to be found in the sputum and urine. He thinks it probable that the disease, when present, has not been recognized, and considers that those cases of supposed tuberculosis in which the tubercle bacillus is not demonstrable should be carefully investigated for this or kindred infection. No successful treatment has been devised, and all cases save one have died within from a few weeks to nine years. The only case which recovered was one in which the infection was recognized in an extremity and the infected member amputated apparently before dissemination had occurred.

Etiology of Peritonsillar Abscess.—N. Schoolman (*Annals of Otology, Rhinology and Laryngology*, March, 1920) calls attention to the possibility of peritonsillar abscess resulting from caries or inflammation due to delayed eruption and impaction of a wisdom tooth. In the cases observed, it was noted that the pus collection did not point as usual in the supratonsillar space, but rather in the region of the base of the anterior pillar and somewhat lateral to it. Excessive trismus was a more or less constant symptom, the patients being quite unable to separate their teeth, making examination necessary through the vestibule of the mouth and the administration of appropriate treatment most difficult. Mention is made of the possibility of a tonsillar or a peritonsillar abscess occasionally following operative procedures on the nose, irrespective of antiseptic precautions. Chronic suppurative otitis media is also referred to as a causative factor, especially of the recurrent type of abscess. Patients thus afflicted will sometimes note a sweetish taste in the mouth, which is caused by the middle ear discharge reaching the pharynx via the eustachean tube and in this way causing infection of the tonsil and the peritonsillar region.

On the Prevalence of Carriers of Endamœba Dysenteriæ Among Soldiers Returning from Overseas Service.—Charles Atwood Kofoid and Olive Swezy (*New Orleans Medical and Surgical Journal*, July, 1920) state that the number of carriers of amebiasis in the United States has been greatly increased by the infections in soldiers returning from overseas, and that a larger number of carriers exist in the normal population in this country than has hitherto been suspected. The dysenteric syndrome is not an essential feature of the disease and the infection is by no means limited to the tropics. The carrier phases are persistent and afford possible foci of contagion. The percentage of carriers relapsing or developing serious sequelæ is as yet unknown.

Tuberculosis of the Eye in the Army.—H. H. Stark (*American Journal of Ophthalmology*, April, 1920) says that according to modern teaching practically every individual has been infected with tuberculosis some time in his life. This infection is overcome by a passive immunity which may last until it is disturbed by excessive physical exercise, mental strain, or disease, at which time there may be a relighting up of old infected areas. The age from which the recent army was selected, the military training, the mental strain and other conditions were such as to be conducive to the redevelopment of any latent tuberculosis foci. Should these conditions be found among the soldiers, treatment should be directed along the same line as that followed in civil practice. Owing to the limited amount of treatment it was possible to give cases of this character, relapses are possible and should be carefully looked for, and the same line of treatment continued in civil life.

Practical Considerations in Connection with Insufficiency of Convergence of the Visual Axes.—J. M. Bannister (*American Journal of Ophthalmology*, April, 1920) advances the following views: 1. That convergence insufficiency is a definite pathological entity. 2. That it is due to lack of proper innervation of the abductor muscles, which innervation is under the control of a special cerebral center. 3. That the use of adductive prisms cannot be relied upon to furnish an estimate of the power of convergence in any given case. 4. That the power of convergence must be determined by finding the punctum proximum of convergence and estimating the maximum convergence in meter angles. 5. That the negative convergence should be determined by adductive prisms as furnishing an important indication of a possible overaction of the external recti, the normal negative convergence being about one metre angle. 6. That the normal maximum of convergence may be placed at about thirteen meter angles, and that any marked falling below this standard is positive evidence of convergence insufficiency. 7. That if the maximum does not fall below six and a half metre angles, exercises to strengthen adduction may effect a cure. 8. That if the maximum is as low as five metre angles, operation, preferably in the nature of an advancement, will be necessary as a rule. 9. That the existence of an apparent esophoria is no bar to efforts to correct the insufficiency in either way.

Effect of Nose and Throat Infections Upon Ocular Functions of Aviators.—Conrad Berens and Claude T. Uren (*American Journal of Ophthalmology*, March, 1920) found that many of the pilots who showed little weakness of converging power as measured by the near point of convergence and prism converging power, showed a rapid onset of fatigue when tested on the ergograph. The same was true of accommodation, only fewer men were examined for fatigue of the accommodation. Their experience leads them to believe that weakness and rapid onset of fatigue of the extraocular and intraocular muscles is frequently associated with nose and throat infections. Weakness in the converging power was often associated with bad landings. Whether this was due to derangement of binocular vision, or to the general disturbance associated with the convergence weakness, is a problem for future research. Of the thirty-eight pilots examined, twenty-eight had complaints of varying degree. Six complained of cold in the head, six of headache, two of constipation, eleven felt tired out and were ambitionless, one had stomach trouble, two complained of recurring attacks of tonsillitis. Physical examination showed four with bronchitis, six with chronic tonsillitis, and seven showed signs of staleness.

A Field Investigation of the Etiology of Trachoma in Eastern Kentucky.—F. B. Eaton (*American Journal of Ophthalmology*, June, 1920) says that climate, soil, dust and individual predisposition are subsidiary and contributory causes of trachoma. Some climates, to an uncertain and limited extent, appear to attenuate the virulence and diminish the contagiousness and transmissibility of the disease. There is no evidence that the trachoma virus has an ectogenous existence. All its known properties, and the conditions attending its dissemination and prevalence, indicate that it is endogenous to the human conjunctiva, and that that is its sole habitat. There is some evidence indicating the existence of a conjunctival affection in animals analogous to trachoma, but it is inconclusive; if existent, its transmissibility to man is, according to the teaching and precedents of bacteriological pathology, improbable. By far the most potent known cause of trachoma is interhuman contagion, due to insanitary habits and social customs.

Eye Lesions Produced by Light Rich in Ultraviolet Rays.—J. van der Hoeve (*American Journal of Ophthalmology*, March, 1920) says that the lens is optically heterogeneous. Ultraviolet rays may seriously damage the retina and the ciliary processes as well by natural light, as in snow blindness, as in artificial light, or in experiments. Senile cataract and senile degeneration of the macula exclude each other in a certain measure; if one is present, the other is absent or less developed. It is probable that the damage of the ciliary processes by light rich in ultraviolet rays is caused by the optical heterogeneity of the lens. A principal cause of cataract is such light, which causes opacity by interfering with the nutrition of the lens through the damage to the ciliary processes. Such light which has passed through the lens is one of the causes of senile macular degeneration.

NEW YORK MEDICAL JOURNAL
INCORPORATING THE
Philadelphia Medical Journal
and the Medical News
A Semimonthly Review of Medicine and Surgery

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY,
Publishers, 66 West Broadway, New York.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, JUNE 15, 1921.

Collectanea.

The National Selected Morticians.—You can nowadays send for the undertaker, the funeral director, or the mortician. They are really a trinity, yet all one. The word mortician was used by Charles Lamb in his *Essays*. Sometimes new terms are used to purge away old ideas. The undertaker of today has little resemblance to the dismal gentleman of Dickens's time, presiding at the head of his mutes, all in rusty black with weepers and staves. So he has changed his name and become a funeral director, and is merely a cheerful yet sympathetic man, anxious to dispel gloom and desolation.

Tea Tasters' Cough.—We would be almost more inclined to look for this cough among the women who leave tea to brew on the kitchen stove and taste it about six times a day, but Dr. A. Castellani (*United States Naval Medical Bulletin,* October, 1920) tells how he first heard of it in a case of chronic bronchitis in an employee on one of the Ceylon tea estates. Tuberculosis had been diagnosed, but the man said that he had only tea tasters' cough. The sputum had mycelial filaments and yeastlike bodies in it. "Tea tasters not only sample infusions, but fill their hands with leaves, bury their noses in them and snuff them up, so inhaling dust. Tea dust in Ceylon constantly has fungi of the genus *monilia, aspergillus, pencillium,* and, sometimes, fungi of *oidium,* also a peculiar streptococcus." These are found in the nasal cavities and bronchial secretions of tea tasters. When those working in tea factories cough, lose weight and strength, they are sent for a while into the country, when the cough gradually disappears.

Psychology and the Grocer.—The retail grocer quickly gets to know the buying habits of his customers, and knows that many things supposed inducive are not so at all. The size of the packet does not always attract; it sometimes creates suspicion, as a certain maker of a patent breakfast food found when he was able to double the quantity for the money. The shape of can or packet is curiously interesting. Height, rather than diameter, says Russell B. Kingman (*American Food Journal,* January, 1921) is always more taking; it seems to give the idea of holding more. The Log Cabin Syrup tin took because it engaged the imagination, suggested the maple or pine forest. If wise, the grocer gets in a stock of that which his star customers prefer. Superlatives on labels do not appeal to the majority, but tasteful designs do, and those cans holding just enough for the ordinary family meal always take better than one which holds a little over, which must take up room in the ice box.

Unilateral Leontiasis Ossia with Optic Atrophy.—The eye complication was due to the bones of the eye socket sharing in the enlargement, and the bone was very dense in character. The case was that of a girl of eleven, whose right vision was less than 6/60, left vision 6/6. Retinoscopy, right and left, —1 D. sphere. Right disc primary atrophy, no choroiditis. No exophthalmos. The child's teeth were honeycombed, and her head asymmetrical. Mr. N. Bishop Harman, F. R. C. S., gives the case *(Proceedings of the Royal Society of Medicine, March, 1921),* and Mr. E. H. E. Stack also cites one which was a remarkable case, though without optic atrophy. It was that of a woman whose whole head had been affected for twenty-one years. After death he found the skull at one spot was three inches thick. Brain and nerve functions were intact. The head was of enormous weight and the woman used to sit supporting it, her forefingers being dislocated outwards by the burden. Death was due to diphtheria.

Hairy Mole.—An old popular explanation of the hairy mole was that the mother had been frightened by a rat after conception. Mr. H. D. Gillies, F. R. C. S., describes an operation of his by which the life of an unhappy young woman was once more rendered livable. She had a large hairy mole from the left angle of the mouth, over the cheek and mandible, and down on the submaxillary region on the left side. She had had to shave every morning. He excised the mole and replaced it by an original pedicle flap from the forehead. There was not enough to fill the submaxillary area, so this was closed by advancement of the neck skin. Eleven days later the pedicle was returned to the forehead and the raw area of forehead Thiersch grafted. The new skin is growing well.

Radium, according to Dr. Wickham, of Paris, was useless; freezing and electrolysis had been tried unsuccessfully. Lang, of Vienna, twenty years ago used to treat lupus in the same way. He had fairly good results with the lupus, but the scars were very irregular and thick and made one face "look like a map of the United States," a protestation of patriotism which even the strongest American patriot would abjure.

INDEX TO VOLUME CXIII.

PAGE.
AARON, Charles D. Active immunization by means of nonvirulent and nontoxic living tubercle bacilli 91
Abdomen, extraabdominal causes of pain in 900
  traumatic 837
  upper, truths and fallacies of conditions in 17
Abdominal aortitis, evolution and prognosis of 72
Abnormalities of foot, management of 82
Abortion, septic, treatment of 836
  treatment of 632
Abscess, peritonsillar, etiology of 902
  retropharyngeal 604
  subphrenic, treatment of 633
Abscesses, typhoidal, induced 172
Acacia, glucose solutions, intravenous injections of 304
Accidents caused by employer's neglect 545
  industrial, statistics of 886
Acid base equilibrium in disease 560
  gastritis, treatment of 12
Acne, modern treatment of 137
  vulgaris, x ray treatment of 778
Acriflavine treatment of gonorrhea 705
Addiction disease, treatment of 179
Addison's disease 292
Adenitis, submaxillary, suppurative 440
  supraclavicular, in pulmonary tuberculosis 261
Adenoidectomy followed by adhesions of velum palati to pharynx 170
Adenoids, operations on, in outdoor clinics in England 470
Adhesions, interperitoneal 39
  of velum palati to pharynx following tonsillectomy or adenoidectomy 170
Adolescence, mental disorders in 418
Adrenals, function of 229
  relation of, to thyroid 389
Adult, general postdiphtheritic paralysis in 577
  life, preventable diseases of 219
  young, effort syndrome in 84
Agatston, S. A. Inflamed eyes 198
Age in pernicious anemia 614
Aged, pulmonary tuberculosis in 780
  surgical operations on 844
Air, hot, in treatment of salivary fistulæ 8
Alastrim, problem of 401
Albumin, egg, in stools, precipitins for 86
  in sputa 574
Albuminurias, classification of 686
Alcohol, effect of, on young persons 761
Alcoholic psychoses 709
Alimentary tract, bacteriology of 713
Alopecia in connection with defective teeth 120
Ames, Fisher, Jr. American Red Cross work among the French people 626
Anaerobes, rôle of, in intestinal flora of infants 86
Analysis, blood, in ophthalmic conditions 562
Anaphylaxis, epinephrine content of suprarenal glands in 759
  following an intradermal protein sensitization test 44
Anatomical consideration of hypophysis cerebri 366
Anatomy, neglected treasures illustrating 339
Anemia, pernicious 170
    age and sex in 614
    with ataxic paraplegia 812
  simple, blood regeneration after, as influenced by various dietary factors 568
Anesthesia, general versus local, in operations on nose and throat 444
  local, of tonsils, simplified technic for 347
  nitrous oxide 897
  oral 898
  regional 898
Anesthetic effects of gasoline vapor 304
Aneurysm, traumatic, of leg 350
Angina pectoris, rapid fall of blood pressure in 901
  streptococcic 43
  Vincent's 215
Animal versus vegetable protein 47
Animals, light giving 784
Anthrax from shaving brushes 477
Antidiphtheritic serum as a preventive of orchitis in mumps 259
Antigens, preparation of, from cultures of tubercle bacillus for complement fixation test 566
Antihemorrhagic serum 486
Antimosquito measures in control of malaria 349
Antinarcotic legislation 51, 87

PAGE.
Antipyretics, effect of, on hearing 215
Antiscorbutic properties of raw beef 40
  value of honey 350
    of malt soup extract 44
  vitamine 305
Antitoxin, diphtheria, effect of, in preventing lodgement and growth of diphtheria bacillus in nasal passages 127
Antivivisection, hysterical 782
Antrum disease, latent 838
  malignant growth of 214
Aortitis, abdominal, evolution and prognosis of 72
Apfel, H. Points of prognostic importance in pneumonia 744
Aphagia, hysterical 793
Aphasia 886
  motor, of cortical or mixed type 637
  sensory 796
Apoplexy, mental states associated with 806
Appendicitis, causation of 601
Argyrol, injection of vas with 687
Arrowsmith, Hubert. Traction pulsion diverticulum of esophagus 463
Arsine poisoning 262
Arsphenamine, effects of 778
Arteries, tortuous temporal 837
Arteriosclerosis, therapeutic management of 751
Arteriosclerotic psychosis, typical form of 899
Arthritis, chronic, observations on 560
  rheumatoid, vaccine treatment of 215
  rôle of prostate and seminal vesicles in 641
Ascaris lumbricoides, life history of 350
Ashby, Winifred, and Butsch, J. L. Effect of digestive period and other factors in reactions after blood transfusions 513
Asnis, Eugene J., Mills, H. Brooker, and Babcock, W. Wayne. Report of case of splenomegaly (Gaucher's disease) 589
Aspiration pneumonia, cause of heart displacement 43
Asthma and asthmatoid states, examination of sputum in 347
Ataxic paraplegia with pernicious anemia 812
Atresia, congenital, of esophagus 42
Atrophy, muscular, Landouzy-Déjérine type of 780
  progressive muscular, Charcot-Marie type of 337
Attributes, tonal, study of 837
Atwell, Wayne J. Anatomical consideration of hypophysis cerebri 366
Atypical form of arteriosclerotic psychosis 899
Auscultation of lungs, refinement in methods of, by electrical means 560
Austrian children, British home for 826
Aviators, ocular functions of, effect of nose and throat infections upon 903
Axes, visual, insufficiency of convergence of 903

BABCOCK, W. Wayne, Mills, H. Brooker, and Asnis, Eugene J. Report of case of splenomegaly (Gaucher's disease) 589
Babcock's operation for varicose veins 897
Baby comforters 341
  welfare work in Europe 844
Bacilli, diphtheria, cultures of, in whole coagulable blood 563
    virulent, carried by cats 127
  tubercle, in sputa 574
    living, active immunization by means of 91
Bacillus, diphtheria, carriers 127
  gas, infections, treatment of 487
  influenza, experiments with 562
  tubercle, cultures of 566
Backache due to neurological conditions 138
  gynecological 142
Bacteria, extraneous, persistence of, in gastrointestinal tract of guineapigs 86
Bacterial vaccine therapy in children 881
  vaccines, treatment of common colds with 559
Bacteriology of alimentary tract 713
  of infected wounds 634
  of pneumonia 728
Bailey, John H. Diagnostic value of pupil in general medicine 864
Ballenger, Edgar G., and Elder, Omar F. Important classification of albuminurias 686
Barker, Lewellys F. Classical endocrine syndromes 353

PAGE.
Barker, Walter C. Röntgen ray therapy in hyperthyroidism 273
Barnes, George Edward. Transient heterophoria and strabismus in neurasthenics 148
Beds, inspection of 545
Beef, raw, antiscorbutic properties of 40
Behrend, Moses. Some upper abdominal truths and fallacies 17
  Surgical complications of pneumonia 527
Benzol, action of 172
Benzyl benzoate in pediatric practice 835
  pharmacological study of 126
Besse, P. M., and Goutzait, P. Bromides in digestive disturbances 628
Bick, H. Treatment of insomnia 775
Bile elimination, hepatic margin of safety in 564
Bilharzia treatment 350
Biliary tract lesions, pathogenesis of 5
Biological therapy 602
Birth rate, consideration of quality or quantity in 251
  voluntary restriction of, in Great Britain 404
Bladder disease, malignant, treatment of, by radium 488
  exstrophy of, Maydl's operation for 896
  female, treatment of tumors of 81
Blair, Thomas S. Present and contemplated antinarcotic legislation 51
Blau, Arthur I. Factors concerned in incidence of contagious diseases 750
Bleeding, new method for control of 95
Block, reverse, with nodal rhythm, and paroxysmal tachycardia 565
Blood, acid base equilibrium of 560
  alkaline reserve capacity of 349
  analysis in some ophthalmic conditions 562
  cells, red, subcutaneous injection of 131
  chemistry in modern medicine 726
  diseases of 721
  effect on, of feeding with calcium salts 128
  findings five years after splenectomy 84
  in pancreatic disease 41
  nitrogen, effect of, on ingestion of large amounts of fluid 561
  pressure, effect of, on ingestion of large amounts of fluid 561
    findings, rational interpretation of 93
    high, in a woman with pneumonia 128
    increased, effect of protein food on 562
    rapid fall of, in angina pectoris 901
    reduction of, in eclampsia 202
    value and significance of, in obstetrics 128
    variations, interpretation of 505
  regeneration after simple anemia 568
  smears, differential diagnosis of malarial parasites in 782
  sodium chloride concentration in 487
  sugar in 128
    reactions after 513
    tolerance test an aid in diagnosis of gastrointestinal cancer 563
    transfusion 29, 83, 629
  volume, influence of intravenous injections of acacia glucose solutions on 304
  whole coagulable, cultures of diphtheria bacilli in 563
Blumgarten, A. S. Rôle of endocrine system in internal medicine 233
Boas, Ernest P. Value of pneumothorax treatment of pulmonary tuberculosis 517
Bodies, loose, in joints, treatment of 896
Body, foreign, removal of 818
Boils, treatment of, by injection method 631
Bone graft in repair of humerus 706
  grafting 559
  necrosis 55
  sinuses, persistent, treatment of 81
Bones, long, single exostosis of, treatment of 127

BOOK REVIEWS:

Alger, Ellice M. Refraction and Motility of the Eye 480
Ambard, L. Physiologie normale et pathologique des reins 208
American Review of Tuberculosis 37
Appelt, Alfred. The Real Cause of Stammering and Its Permanent Cure 300
Atherton, Gertrude. The Sisters-in-Law 829
Audoux, Marguerite. Marie Claire's Workshop 36
Aviation Medicine in the A. E. F. 344

BOOK REVIEWS: Page.
Bandler, Samuel Wyllis. The Endocrines 407
Barnett, Avrom. Foundations of Feminism 410
Barton, G. A. H. Backwaters of Lethe 122
Bay, James. Helping the Rich 302
Bechhold, H. Colloids in Biology and Medicine 257
Best Psychic Stories 301
Bishop, Louis Faugères. Heart Troubles 34
Boothby, Walter M. Laboratory Manual of the Technic of Basal Metabolic Rate Determinations 480
Bordet, Jules. Traité de l'immunité dans les maladies infectieuses 208
Brieux. Three Plays 888
Brockbank, E. M. The Diagnosis and Treatment of Heart Disease 34
Brown, Edna A. Journey's End 889
Burr, Jane. The Passionate Spectator 624
Burroughs, John. Accepting the Universe 829
Burnham, Ethel Campbell. The Community Health Problem 301
Butler, Samuel. Erewhon Revisited, Twenty Years Later 210
Calmette, A. L'Infection bacillaire et la tuberculose chez l'homme et chez les animaux 208
Carpenter, G. D. Hale. A Naturalist on Lake Victoria 344
Carroll, Robert S. Old at Forty or Young at Sixty 300
Cathelin, Dr. F. Travaux annuels de l'Hôpital d'Urologie 208
Chesterton, Gilbert K. The Uses of Diversity 551
Clarac, Dr. A., and Grall, Dr. Charles. Traité pratique de pathologie exotique 208
Clayton, E. Bellis. Medical Gymnastics in Medicine and Surgery 122
Clemenceau, Georges. The Surprises of Life 124
Cleveland Hospital and Health Survey 697
Collis, Edgar L. The Industrial Clinic 79
Cope, Zachary. Surgical Aspect of Dysentery Including Liver Abscess 550
Cow, Douglas. Pharmacology 408
Crabb, Arthur. Ghosts 772
Craig, Charles F. The Wassermann Test 624
Darling, S. T. Hookworm and Malaria Research in Malaya, Java, and the Fiji Islands 79
Davis, A. Edward. Eye, Ear, Nose and Throat Nursing 624
Dell, Floyd. Moon-calf 123
Doyen, E. Surgical Therapeutics and Operative Technique. Volumes II and III 622
Dunlap, Knight. Mysticism, Freudianism, and Scientific Psychology 696
Edgar, Thomas W. Patient's Handbook on the Treatment of Diabetes Mellitus 78
Flewelling, Ralph Tyler. Bergson and Personal Realism 828
Forster, E. M. Howards End 889
Fortescue-Brickdale, J. M. A Textbook of Pharmacology and Medical Treatment for Nurses 770
Geddes, Patrick. The Life and Work of Sir Jagadis C. Bose, M.A., D.Sc., LL.D., F.R.S., C.I.E., C.S.I. 480
Grall, Dr. Charles, and Clarac, Dr. A. Traité pratique de pathologie exotique 208
Gregory, Odin. Caius Gracchus 124
Harrington, Sir John. The School of Salernum. Regimen Sanitatis Salernitanum 888
Harrow, Benjamin. Vitamines, Essential Food Factors 548
Heifetz, Elias. The Slaughter of the Jews in the Ukraine in 1919 552
Hericourt, Dr. J. The Social Diseases: Tuberculosis, Syphilis, Alcoholism, Sterility 209
Herschell, Dr. G. Textbook of Indigestion 122
Higgins, Aileen Cleveland. (Mrs. John Archibald Sinclair.) The Psychology of Nursing 771
Horowitz, Philip. Diabetes 78
Jameson, W. Wilson. Hygiene 345
Jeanbrau, Nové, Josserand, and Ombrédanne. Chirurgie, reparatrice et orthopedique 208
Johnson, Gladys E. Wind Along the Waste 700
Julius, Haldeman. Dust 699
Kempf, Edward J. Psychopathology .. 406
King, W. G. Vaccination in the Tropics 167
Kinkead, Eleanor Talbot. The Spoils of the Strong 258
Knox, Alice Vance. General Practice and X Rays 699

BOOK REVIEWS: Page.
Labbé, Dr. Marcel. Le Diabète sucré. 208
Law, Frederick M. Mastoids Röntgenologically Considered 478
Legueu, Professor, and Papin, Dr. E. Précis d'urologie 208
Lehrfeld, Louis. Short Talks on Personal and Community Health 551
Lewis, Sinclair. Main Street, the Story of Carol Kennicott 830
Lewis, Thomas. The Mechanism and Graphic Registration of the Heart Beat 34
Lofting, Hugh. The Story of Doctor Doolittle 125
Loosmore, Charles. Nerves and the Man 257
Löwenstein, Von Dr. Ernst. Vorlesungen über Bakteriologie, Immunität, spezifische Diagnostik und Therapie der Tuberkulose 479
Lumb, Norman. The Systematic Treatment of Gonorrhea in the Male .. 409
McFee, William. Captain Macedoine's Daughter 410
McMechan, F. H. Nitrous Oxide Oxygen Analgesia and Anesthesia in Normal Labor and Operative Obstetrics 699
Macaulay, Rose. Potterism 168
Maranón, Gregorio. Neuvas Orientaciones Sobre la Patogenia y Tratamiento de la Diabetes Insipida .. 78
Marcy, Mary. A Free Union 890
Martin, Everett Dean. The Behavior of Crowds 698
Merrick, Leonard. The House of Lynch 35
Myerson, Abraham. The Nervous Housewife 80
New Decameron 346
Oelze, F. O. Untersuchungsmethoden und Diagnose der Erreger Geschlechtskrankheiten 888
O'Kelly, Seumas. The Golden Barque and the Weaver's Grave 36
Optimistic Medicine or Early Treatment of Simple Problems Rather Than the Late Treatment of Serious Problems 550
Papin, E., and Legueu, Précis d'urologie 208
Pryde, Anthony. Jenny Essenden 700
Reid, Sir Archdall. Prevention of Venereal Disease 166
Report of the Surgeon General, U. S. Army, 1920 549
Revue de la Tuberculose 828
Roger, Widal, et Teissier. Nouveau traité de médecine 208
Roth, Paul Bernard. Orthopedics for Practitioners 623
Rubinstein, M. Traité pratique et sérologie et de sérodiagnostic 208
Schamberg, Jay Frank. Compend of Diseases of the Skin 699
Schem, Lida C. The Hyphen 211
Segard, Dr. Maurice. Consultaire 208
Sergent, Ribaudeau, Dumas, and Babonneix. Traité de pathologie médicale et de therapeutique appliquét. 208
Snaith, J. C. The Adventurous Lady 258
Southard, E. E. Shell Shock and Other Neuropsychiatric Problems 167
Stern, G. B. Debatable Ground 625
Stewart, Sir James Purves. The Diagnosis of Nervous Diseases 548
Stratton, George Malcolm. Theophrastus and the Greek Physiological Psychology Before Aristotle 696
Surgical Clinics of North America 697
Swedenborg, Emanuel. The Soul of Rational Psychology 256
Teasdale, Sara. Flame and Shadow .. 831
Thompson, Loyd. Syphilis 409
Todd, Alan H. Lectures on Surgery to Nurses 409
Tolstoi, Leo. Resurrection 482
Traité de pathologie médicale et de therapeutique appliquét 208
Transactions of the American Association of Genitourinary Surgeons .. 770
Tubby, A. H. A Consulting Surgeon in the Near East 769
Tuberkulose-Bibliothek 622
Tuohy, Ferdinand. The Secret Corps 168
Turner, Clare Elsmere. Hygiene, Dental and General 623
Wallace, Edgar. The Four Just Men. 483
Wharton, Edith. The Age of Innocence 35
Wolff, Von Dr. Walter. Taschenbuch der Magen- und Darmkrankheiten 552
Woodhead, Sir German. Industrial Colonies and Village Settlements for the Consumptive 768
Woodhead, Sir German, and Varrier-Jones, P. C. Industrial Colonies and Village Settlements for the Consumptive 210
Young, Francis Brett. The Tragic Bride 771

Page.
Botulism 900
  from canned ripe olives 40
Bovine udder, immunity of, to carcinoma 578
Boys, twenty-four hour schedule for 131
Brain abscess 56
  and mind 250
  of animals, effects of radium on 419
  repair 775
  tissue, normal effect of radium on 568
  tumor as seen in hospitals for insane .. 819
    simulating lethargic encephalitis 779
Bram, Israel. Exophthalmic goitre and surgery 266, 330
  Medical treatment of toxic goitre 412
Brav, Aaron. Eye strain in everyday practice 869
Breast cancer, skin involvement in 350
  cholesterin deposits in 611
  feeding, study of, in Minneapolis 131
Breech presentation, management of 177
British home for Austrian children 826
Briggs, L. Vernon, and Hodskins, Morgan B. Report of neuropsychiatric work at Camp Devens, Mass. 749
Bright's disease, treatment of 304
Broadwin, I. T. Myotonia atrophica 190
Bromides in digestive disturbances 628
Bronchi, foreign bodies in 438, 494
Bronchiectatic cavity, foreign bodies removed from, by peroral bronchoscopy 461
Bronchiolar hypertonus 565
Broncholith removed from bronchiectatic cavity by peroral bronchoscopy 461
Bronchopulmonary spirochetosis (Castellani) 186
Bronchoscopic diagnosis of interpulmonary disease 494
Bronchoscopy, fluoroscopic 437, 491
  peroral, in removing broncholith and pneumoconiotic material from bronchiectatic cavity 461
Brown, Dr. John—physician author 29
Buchanan, J. Arthur. Familial distribution of migraine epilepsy syndrome .. 45
Buckley, Albert C. Mental states associated with apoplexy and allied conditions 806
Bullard, E. A. Gynecological backache. 142
Burglary and dentistry 75
Burns, Frank. Treatment of addiction disease 179
Burns, Joseph P. Fumigation inhalation treatment of syphilis 183
Burns, electric, followed by pyramidal sclerosis 351
  orthopedic treatment of 633
Butler, George F.—Physician author 204
Butsch, J. L., and Ashby, Winifred. Effect of digestive period and other factors in reactions after blood transfusions 513
Butts, Donald C. A. Preliminary report on immunity of bovine udder to carcinoma 578

CAFFEINE, action of, on heart 304
Calcium content of blood, effects on, of feeding with calcium salts 128
  magnesium phosphorus balance in children subject to convulsive disorders 132
  of carrots, experiments on utilization of, by man 40
  salts, effects of feeding with, on calcium content of blood 128
Calculi, renal, operation for 1
  ureteral 706
  vesical 838
Calculus, urinary, treatment of 558
Callison, James G. Double mastoid operation 431
  Thyroid deficiency in otolaryngology . 283, 326
Camp Devens, Mass., neuropsychiatric work at 749
Canal, inguinal, undescended testicle in. 656
Canaliculus, lacrymal, concretion of 584
Cancer, gastric, x ray diagnosis of 10
  gastrointestinal, blood sugar tolerance test as aid in diagnosis of 563
  inoperable, treatment of, with selenium 559
  mortality in Basle 350
  nonsurgical methods of treating 746
  of breast, skin involvement in 350
  of nasal fossæ 434
  of nasopharynx 434
  of rectum, treatment of 39
  of tonsil 434
  of uterus in young women 303
  research in Great Britain 27
    progress in 471
  treatment, progress in 471
Cancerous rectum, excision of, through vaginal section 21
Carbohydrate metabolism as related to diabetes 591

PAGE.
Carcinoma, immunity of bovine udder to. 578
  of prostate, treatment of 705
Cardiac disorders, psychic management of persons with 898
  efficiency, methods of estimating 561
  murmurs, significance of 171
Cardiopathies, effect of pregnancy on 171
Cardiospasm 42, 901
  impermeable, retrograde stretching in treatment of 568
Cardiovascular disease, prognosis in 565
Carmody, Thomas Edward. Stenosis of esophagus 427
Carrel-Dakin technic in civil life, possibilities of 350
Carriers, diphtheria 127
  of endamœba dysenteriæ among soldiers returning from overseas service 903
Carrots, calcium of, experiments on utilization of, by man 40
Case, unique 163
Cataract, congenital, proper time for operation on 172
  operation, unusual 452
Cathartic giving, lure of 878
Cattle, tuberculosis in, measures for control of 525
Cecil, Russell L. Bacteriology and pathogenesis of pneumonia 728
Cecum, dilatation of, ileocolostomy and exclusion in 321
  perforation of 39
Celibacy, Shaker, psychologically interpreted 800
Cell epithelioma, squamous, of skin 894
Cells, lymphocytic, in sputa 574
  red blood, subcutaneous injection of 131
Cephalea, treatment of, by lumbar puncture 215
Cerebellar involvement simulated by lesion of occipital lobe 540
Cerebral hemorrhage, surgical treatment of, in the newborn 128
Cerebrospinal fluid, experiments with 172
  in diagnosis of tuberculous meningitis 347
  meningitis, epidemic 139
Cerumen, unusual symptoms caused by 900
Cervical stump, management of, in supravaginal hysterectomy 632
Character, basis of, analytical view of 901
Charcot-Marie type of progressive muscular atrophy 337
Chemical examination of cerebrospinal fluid in diagnosis of tuberculous meningitis 347
Chemistry, blood, in modern medicine 726
Child, blood findings in, five years after splenectomy 84
  boarded out, medical supervision of 87
  hyperthyroidism in 275
  of eleven weeks, tumor of hypopharynx in 458
Children, Austrian, British home for 826
  bacterial vaccine therapy in 881
  disorders of internal secretions in 239
  effort syndrome in 84
  electrocardiography in 132
  European, in tropical highlands 172
  food requirements of, after first year 84
  subject to convulsive disorders, calcium magnesium phosphorus balance in. 132
  weak feet in, treatment of 778
  with diphtheria, administration of digitalis to 705
  working, health of 844
  young, misuse of milk in diets of 85
Chinese hospital, pathological conditions in 530
Chloroform, thymic hypertrophy and syncope under 262
Cholecystgastrostomy 39
Cholecystitis, induction of 559
Cholesterin deposits in breast 611
Cholesteatoma 55
Chronic diseases, rationalizing treatment of 555
  prostatitis, etiological factors of 661
Circulation, gravity resisting ability of 348
  in nutritional disturbances 131
Clark, L. Pierce. Sociological training of epileptics 851
  Some emotional reactions in epileptics. 785
Claudication, intermittent 140
Climacteric syndromes 363
Clinic, relation of social service to 129
Clinical examination of upper gastrointestinal tract 216
  syphilis of central nervous system 351
Clinicomicroscopical observations on filariasis 349
  for mental diseases 27
Clinics, group consultation 474
  outdoor, in England, operations on tonsils and adenoids in 470
Clothes, influence of, on health 618
Club foot, treatment of 262
Coccidioidal granuloma 902
Cohen, Harry. Willems treatment of joint lesions 730
Cohen, Samuel. Technic of simpler and safer tonsillectomies 485
Cold, common, treatment of, with bacterial vaccines 559
Colon, dilatation of, ileocolostomy and exclusion in 321
  injury in nephrectomy 23
Colon, mobile V, its causes, effects and correction 741
Columella, depressed, Gillies' new method in giving support to 448
Commentaries, modern, on Hippocrates 569
Complement fixation test, preparation of antigens from cultures of tubercle bacillus for 566
Concretion of lacrymal canaliculus 584
Conjunctiva and tarsus, resection of, (combined excision) 454
Conscious control, extending field of 821
Consumption, propaganda against 405
Consumptive, soul of the 24
Contagious diseases, factors concerned in incidence of 750
Control, conscious, extending field of 821
Convergence, of visual axes, insufficiency of 903
Convulsant effects of gasoline vapor 304
Convulsions, calcium magnesium phosphorus balance in children subject to 132
Coon, C. E. Corrective gymnastics 832
Cord, myelitis of, acute and chronic 139
  spinal, gunshot wounds of 634
Cornea, ulcer of 332
Coronary thrombosis associated with paroxysmal tachycardia of ventricular origin 565
Corpus luteum, function of 128
  of menstruation and pregnancy 230

CORRESPONDENCE:

  Letter from Geneva 766
  London letter 26, 69, 114, 159, 248, 404, 476, 618, 694
Cortical type of motor aphasia 637
Costal margins, diagnostic significance of inspiratory movements of 83
Cough, tea tasters' 904
Crabbe, Dr. George, physician author 73
Crane, Claude G. Source of focal infection iritis 442
Craniocerebral injuries, treatment of 634
Crile, George W. Note on relation between adrenals and thyroid 389
Cryptitis as cause of pruritus ani 19
Cultures of diphtheria bacilli in whole coagulable blood 563
  of tubercle bacillus, preparation of antigens from, for complement fixation test 566
Cumston, Charles Greene. Icterus gravis 200
  Seborrhea of scalp 156
Curie, Marie 820
Current, constant, generator of, for production of x rays 529
Cyriax, Edgar F., and Melville, Stanley. Pathology of socalled sprains of wrist 538
Cystitis, suppurative, treatment of 82
Cytological examination of sputum in diagnosis of asthma and asthmatoid states 347

DEAVER, John B. Hyperthyroidism from surgical point of view 265
De Brun, Harry Schultz. Singultus 789
Defectives, mental, in Delaware 639
Delinquents, defective, female, provided for by State 712
Dental infection, focal, remote manifestations of 349
  surgeon, first, hospital 826
Dentistry and burglary 75
Dewees, A. M. Educational campaign against tuberculosis in Pennsylvania 608
Diabetes in relation to carbohydrate metabolism 591
  island of Langerhans in 41
  mellitus, prevention of 418
    treated by novarsenobenzol 262
  metabolism in 561
  thyroid 262
Diabetics, saliva in 40
  various types of 41
Diagnosis, general, aided by proctological examination 60
  of diseased kidneys, newer laboratory methods in 196
  of malignant tumors of heart 294
  specific, of acute lobar pneumonia 60
Diaphragm, eventration of 567
Diet after gastroenterostomy 213
  in chronic intestinal invalid 261
  in disease of upper gastrointestinal tract 216
  in typhoid fever 557
  influence of, on gastrointestinal tract 86
  of weanling 822
Dietary factors in blood regeneration after anemia 568
Dietetic reform, urgent need of 87
  treatment of gastric ulcer 567
Diets, of infants and young children, misuse of milk in 85
Digestion, diseases of, due to intestinal parasites 488
Digestive disturbances, bromides in 628
  period, effect of, and other factors in reactions after blood transfusions 513
Digitalis, administration of, to children with diphtheria 705
  clinical experience with dried aqueous extract of 176
  lutea, effects on cats of 561
  thapsi, effect on cats of 561
  value of large single doses of 83
Dilatation of cecum and colon, ileocolostomy and exclusion in 321
  of heart during or following surgical operations 173
  of pupil 636
Dilutions, fractional and percentage 780
Diphtheria, active immunization against 349
  antitoxin, effect of, on diphtheria bacillus in nasal passages 127
  bacilli, avirulent, inoculation of human throats with 900
    cultures of, in whole coagulable blood 563
  carriers, treatment of 127
  digitalis administered to children with 705
  dust and manure in etiology of 349
  myocarditis and endocarditis in 340
  prevention of 219
Disease, acid base equilibrium of blood in 560
  gallstone, dangers to life associated with 4
  occupational 612
  on board ship 784
  venereal, prevention of 49
Diseases, contagious, errors in diagnosis of 349
  epidemic, in London 71
  mental, clinics for 27
  preventable, of adult life 219
Dislocations, old, of hip, treated by reduction 82
Dispensaries, medical social service in 62, 112
Displacement, heart, following aspiration pneumonia 43
  visceral, phases of, in general practice 497
Disseminated sclerosis, etiology of 779
Diverticula, duodenal 559
Diverticulum, traction, of esophagus 489
  traction-pulsion, of esophagus 463
Drueck, Charles J. Excision of cancerous rectum through vaginal section 21
Drug addiction, preparations for 692
    treatment of 179
  narcotic, control, in State of New York 106
    situation 203
  treatment of disease in upper gastrointestinal tract 217
Drugs, habit forming 308
  reasons for taking 162
Duct, hypophyseal, tumors 776
  sign in mumps 43
Ductless gland therapy, observations upon 262
Ducts and gallbladder, operations on 633
Duodenal diverticula 559
  ulcers, treatment of 633
Duodenum, action of various salts on liver after their introduction into 313
Dysmenorrhea 897
Dyspituitarism with hypertension 708

EAR conditions, serious, in ambulatory patients 54
  middle, complications 55
Eastman, Dr. Charles Alexander, physician-author 252
Eclampsia, reduction of blood pressure in 202
  treatment of 128
Edema, chemical studies on 562

EDITORIALS:

  Abdominal aortitis, evolution and prognosis of 72
  Accidents caused by neglect 545
    industrial, statistics of 886
  Adenoids, operations on, in outdoor clinics in England 470
  Age in pernicious anemia 614
  Alastrim, problem of 401
  Alcohol, effect of, on young persons 761
  Anatomy, neglected treasures illustrating 339
  Anemia, pernicious, age and sex in 614

PAGE
EDITORIALS:
  Aortitis, abdominal, evolution and prognosis of 72
  Aphasia 886
  Austrian children, British home for 826
  Babies' comforters 341
  Barbers, East and West 31
  Beds, inspection of 545
  Birth rate, consideration of quality or quantity in 251
  Blood pressure, reduction of, in eclampsia 202
    transfusion of 29
  Brain and mind 250
  Bridges, Dr. Robert Seymour, physician-author 543
  British home for Austrian children 826
  Brown, Dr. John, physician-author 29
  Burglary and dentistry 75
  Butler, George F., physician-author 204
  Cancer research, progress in 471
    treatment of, progress in 471
  Case, unique 163
  Children, Austrian, British home for 826
  Clinics, outdoor, in England, operations on tonsils and adenoids in 470
  Crabbe, Dr. George, physician-author 73
  Dental surgeon, first hospital 826
  Dentistry and burglary 75
  Diagnosis of malignant tumors of heart 294
  Diet of weanling 822
  Diphtheria, myocarditis and endocarditis in 340
  Disease, occupational 612
  Drug addiction, preparations for 689
    narcotic, situation 203
  Drugs, reason for taking 162
  Eastman, Dr. Charles Alexander, physician-author 252
  Eclampsia, reduction of blood pressure in 202
  Educating the staff 75
  Encephalitis lethargica, prevalence of 399
  Endocarditis in diphtheria 340
  Esophagus, hematemesis and varicose veins of 118
  Evolution of abdominal aortitis 72
  Exercise, exaggerated 202
  Exophthalmic goitre, nonsurgical methods of treating 398
  Fevers, unclassified 689
  Food, well cooked, for poor people of London 297
  Goitre, exophthalmic, nonsurgical methods of treating 398
  Golf as public health measure 822
  Gould, Dr. George Milbury, physician-author 883
  Gynecologists in Persia 546
  Health centre, ideal 297
    influence of reading on 882
    public, effect of inventions on 401
      golf in relation to 822
  Heart, malignant tumors of 294
  Hematemesis of esophagus 118
  History 826
  Hospital care, for mental diseases in Canada 72
    dental surgeon, first 826
  Human stock, better 545
  Hysterical chemistry 688
  Infant welfare 613
  Intellectuals, insufficient propagation among 689
  Intestinal stasis, chronic, treatment of 760
  Intravenous protein therapy in puerperal septicemia 823
  League of remembrance 298
  Lerrigo, Dr. Charles Henry, physician-author 613
  Lever, Charles James, physician-author 400
  Life, expectation of, past and present 882
  Malignancy, new theory of 542
  Malignant tumors of heart, diagnosis of 294
  Man versus microbe 160
  Medical relief in Russia 296
    research 116
  Medicine and agriculture 28
    passing of Greek K in language of 341
    simplified 825
    Toronto Academy of 297
  Meningeal phenomena in apical pneumonia 250
  Mental diseases, new provision for hospital care for, in Canada 72
  Microbe versus man 160
  Midwifery, present position of, in Great Britain 294

PAGE.
EDITORIALS:
  Mind and brain 250
  Morality, military 826
  Myocarditis in diphtheria 340
  Narcotic drug situation 203
  Naylor, Dr. James Ball, physician-author 118
  Nonsurgical methods of treating exophthalmic goitre 398
  Nordau, Dr. Max, physican-author 295
  Nurse, registered, problem of 161
  Occupational disease 612
  Operations on tonsils and adenoids in outdoor clinics in England 470
  Optical abuses 163
  Peebles, Dr. James Martin, physician-author 824
  Pellagra, causation of, and quality of protein 885
  Penology, new 615
  Pernicious anemia, age and sex in 614
  Pestilence, passing of 688
  PHYSICIAN-AUTHORS:
    Bridges, Dr. Robert Seymour 543
    Brown, Dr. John 29
    Butler, George F. 204
    Crabbe, Dr. George 73
    Eastman, Dr. Charles Alexander 252
    Gould, Dr. George Milbury 883
    Lerrigo, Dr. Charles Henry 613
    Lever, Dr. Charles James 400
    Naylor, Dr. James Ball 118
    Nordau, Dr. Max 295
    Peebles, Dr. James Martin 824
    Quackenbos, Dr. John Duncan 338
    Smollett, Dr. Tobias George 472
    Veresaev, Dr. Vikenty 161
    Watson, Dr. Edward Willard 762
  Plague stalks abroad 760
  Pneumonia, apical, meningeal phenomena in 250
  Practitioner, busy 253
  Prognosis of abdominal aortitis 72
  Propagation, insufficient, among intellectuals 689
  Protein therapy, intravenous, in puerperal septicemia 823
  Publisher's announcement 338
  Puerperal septicemia, intravenous protein therapy in 823
  Quackenbos, Dr. John Duncan, physician-author 338
  Reasons for taking drugs 162
  Respiratory diseases, effect of cold on 612
  Season's greetings 28
  Septicemia, puerperal, intravenous protein therapy in 823
  Sex in pernicious anemia 614
  Smollett, Dr. Tobias George, physician-author 472
  Stock, human, better 545
  Stasis, chronic intestinal, treatment of 760
  Surgeon, dental, first hospital 826
  Therapy, intravenous protein, in puerperal septicemia 823
  Thermometers old and new 544
  Tonsils, operations on, in outdoor clinics in England 470
  Transfusion of blood 29
  Tuberculosis, influence of smoke abatement upon 542
    patients not wanted in Texas 75
    problem of present day 30
  Tumors, malignant, of heart, diagnosis of 294
  Veins, varicose, and hematemesis of esophagus 118
  Veresaev, Dr. Vikenty, physician-author 161
  Warnings, unregarded 74
  Watson, Dr. Edward Willard, physician-author 762
  Weanling, diet of 822
  What do you read? 882
  What exercise is best? 117
  Yellow fever, passing of 688
Educating the staff 75
Effect of tobacco on man 809
Eidelsberg, Joseph. Addison's disease 292
Einhorn, Max. Studies on action of various salts on liver after their introduction into duodenum 313
Eising, Eugene H. Willems treatment of kneejoint injuries 734
Elder, Omar F., and Ballenger, Edgar G. Important classification of albuminurias 686
Electrocardiographic studies of heart in influenza 565

PAGE.
Electrocardiography in children 132
Elephantiasis with reference to syphilis 535
Elimination, bile, hepatic margin of safety in 564
Ellis Island, neuropsychiatric work on 840
Ellison, Everett M. Sensory aphasia 796
Emphysema, causal factors of, attending bronchiolar hypertonus 565
  mediastinal, following aspiration pneumonia 43
Empyema, acute, treatment of 837
Encephalitis, ambulatory acute 348
  epidemic, lethargic and myoclonic forms of 130
  localized, multiple sclerosis in relation to 781
  lethargica 351
    as complication of influenza 815
    etiology and prophylaxis of 895
    prevalence of 399
    simulated by brain tumor 779
    with severe recurrent narcolepsy 424
    with unusual ocular symptoms 707
Endamœba dysenteriæ, carriers of, among soldiers returning from overseas 903
Endocarditis in diphtheria 340
Endocrinasthenia 221
Endocrine disturbances, surgery in 280
  exhaustion 225
  gland extracts 395, 468
  manifestations in mental cases 417
  syndromes, classical 353
  system, rôle of, in internal medicine 233
  weariness 288
Endocrines in pellagra 416
  in pellagroid syndromes 416
  relationship of psychopathology to 386
Endocrinology in pharmacodynamics 259
  practical application of 593
  relation of, to vegetative or visceral neurology 364
  survey of 374
Endoscopist, peroral, qualifications of 451, 489
Endoscopy 897
Enteritis, infectious, acute, with polyneuritic syndrome 40
Epidemic cerebrospinal meningitis 139
  diseases in London 71
Epidemiology of influenza 129
Epilepsy, influence of influenza on 849
  new treatment of 834
Epileptic fit, consciousness in 710
Epileptics, sociological training of 851
  some emotional reactions in 785
Epinephrine content of suprarenal glands in anaphylaxis 759
  hypersensitiveness in hyperthyroidism 174, 564
Epistaxis, severe, associated with telangiectases of face and mucous membranes of nose and throat 425
Epithelioma, squamous cell, of skin 894
Erysipelas followed by acute thyroiditis 262
  phenoiodine in 98
  treatment of, in newborn 262
Esophageal malignancy, radium in 493
Esophagoscopy, fluoroscopic 437, 491
Esophagus, congenital atresia of 42
  foreign bodies in 438, 447, 494
  hematemesis and varicose veins of 118
  stenosis of 427
  stricture of 490, 781
  suspected foreign body in, aid to diagnosis of 495
  traction diverticulum 463, 489
Etiology of disseminated sclerosis 779
  of influenza 129
  of peritonsillar abscess 902
Eventration of diaphragm 567
Evolution of abdominal aortitis 72
Exclusion in dilatation of cecum and colon 321
Exercise, exaggerated 202
  in treatment of heart disease 128
  what is best? 117
Exogenous predilection types, position of iodoform psychosis among 901
Exophthalmic goitre, correlation of basal metabolism and pulse rate in 175
  nonsurgical methods of treating 398
  surgery in 330
  surgical treatment of 264, 266
Exstrophy of bladder, Maydl's operation for 896
Extracts, endocrine gland 468
Eye diseases, treatment of 69
  effects of various toxemias upon 128
  lesions produced by light rich in ultraviolet rays 903
  strain in everyday practice 869
  tuberculosis of, in army 903
Eyeball, blows upon 837
  injury to, remarkable cases of 816
Eyes, inflamed 198
Ezickson, William J. Some considerations of diseases of genitourinary tract 684

PAGE.
FACE, telangiectases of, associated with severe epistaxis 425
Facial paralysis 55
Familial distribution of migraine-epilepsy syndrome 45
Fat soluble vitamine A 305
Fatigue 288
Faught, Francis Ashley. Rational interpretation of blood pressure findings 93
Feeding, breast, study of, in Minneapolis 131
Feet, weak, in children, treatment of 778
Female, acquired urinary incontinence in, 834
  bladder, treatment of tumors of 81
  defective delinquents provided for by State 712
Fever, hay 875
  relapsing 130
    spirillum of, developmental forms of 129
  typhoid, diet in 557
    versus influenza 754
  typhus 473
Fevers, specific, followed by urticaria 350
  unclassified 689
Filariasis, clinicomicroscopical observations on 349
Fistulæ, salivary, treatment of, by massage and hot air 8
Fixation, test complement, preparation of antigens from cultures of tubercle bacillus for 566
Flora, intestinal, of infants, rôle of certain anaerobes in 86
Fluoroscopic bronchoscopy 437, 491
  esophagoscopy 437, 491
  gastroscopy 437, 491
Focal dental infections, remote manifestations of 349
  infection, diseased tonsils as factor in 465
    iritis, source of 442
    rectal tract as source of 873
    severe, improvement in Graves's disease subsequent to 259
Food, protein, effect of, on increased blood pressure 562
  requirements of children after first year 84
  well cooked, for poor people of London 297
Foot abnormalities, management of 82
  club, treatment of 262
Fossæ, nasal, cancer of 434
Fowler, Robert H. Gunshot wound of lateral sinus 453
Fracture cases, serum of, in treatment of delayed union 838
Fractures 610
Frankel, Bernard. Encephalitis lethargica as complication of influenza 815
  Influenza versus typhoid fever 754
Frantz, Morris H. Hyperthyroidism in child 275
Freudenthal, Wolff. Telangiectases of face and mucous membranes of nose and throat associated with severe epistaxis 425
Friedman, G. A. Suggestions regarding rôle of hypophysis in Graves's disease and myxedema 370
Friedman, Joseph H. Diagnosis and treatment of sterility 702
Friedman, Joseph, and Greenfield, Samuel D. Fractured skull 193
  Retropharyngeal abscess 604
  Two cases of foreign body removal 818
Frog larvæ, growth and development of, interrelation of thyroid and hypophysis in 417
Fumigation treatment of syphilis 183, 711

GALLAND, Walter I. Some toxicological aspects of surgical rubber goods 334
Gallbladder and ducts, operations on 633
  lesions, pathogenesis and physiopathology of 5
Gallstone disease, dangers to life associated with 4
Ganges River, examination of water from 199
Gardner, James A. Difficulties encountered in prostatectomy 659
Garretson, William V. P. Endocrinasthenia 221
Gas bacillus infections, treatment of 487
Gastric ulcer, dietetic treatment of 567
  etiology and treatment of 127
  x ray diagnosis of 10
Gastritis, acid, treatment of 12
  chronic, treatment of 39
Gastroenteritis, acute, treatment of, in infancy 488
Gastroenterology in relation to mouth 14
Gastroenterostomy, diet after 213
Gastrointestinal cancer, blood sugar tolerance test as aid in diagnosis of 563
  tract of guineapigs as influenced by diet 86
    clinical examination of 216
    diet in treatment of 216
    drug treatment of disease in 217

PAGE.
Gastroscopy, fluoroscopic 437, 491
Gastrosuccorrhea, frequency of mild forms of 782
Gaucher's disease 586
  report of case of 589
Generator of constant current for production of x rays 529
Genital tuberculosis in males 126
Genitourinary tract, diseases of 684
  röntgen diagnosis of lesions of 657
Geyser, Albert C. Phthisis pulmonalis 103
Gies, William J., Kahn, Max, and Limerick, O. Victor. Effect of tobacco on man 809
Gilbride, John J. Undescended testicle in inguinal canal 656
  Woody or ligneous phlegmon of reclus. 56
Gillies's new method in giving support to depressed nasal bridge and columella 448
Gland, ductless, therapy, observations upon 262
  endocrine, extracts 395, 468
  interstitial, function of 393
  parotid, malignant growth of 214
  pineal 239
  thymus 239
  thyroid 239, 245
  hypertrophy of, influence of iodine on 172
Glanders, human 172
Glands, suprarenal, epinephrine content of, in anaphylaxis 759
Glucose tolerance test in chronic vascular hypertension 174
Glycosuria during pregnancy 260
Goetsch, Emil. Diagnosis and treatment of hyperthyroidism 378
Goitre 277
  exophthalmic, correlation of basal metabolism and pulse rate in 175
    nonsurgical methods of treating 398
    surgery in 330
    surgical treatment of 264, 266
  radium treatment of 127
  surgery, practical points in 263
  toxic, management of, with radiation 247
    medical treatment of 412
  treatment of, by surgical and x ray methods 777
Goldman, Harry. Rectal tract as source of focal infection 873
Goldstein, Hyman I. Scarlatina 148
Golf as public health measure 822
Gonadal syndromes 362
Gonads 229
Gonorrhea, acriflavine treatment of 705
  silver permanganate in 896
Gordon, Alfred. Lesion of occipital lobe simulating cerebellar involvement 540
  Reciprocal influence of influenza and epilepsy 849
Gordon, Murray B. Disorders of internal secretions in children 239
Gould, Dr. George Milbury, physician-author 883
Gout, hyperuricemia in 260
Gouzait, P., and Besse, P. M. Bromides in digestive disturbances 628
Grad, Herman. Phenoiodine in puerperal sepsis and postoperative pneumonia 101
Grafting, bone 559
Graham-Mulhall, Sara. Experiences in narcotic drug control in State of New York 106
Granuloma, coccidioidal 902
  ulcerating, of pudenda 213
Graves's disease, frequency of, in France 782
  improvement in, subsequent to severe focal infection 259
  role of hypophysis in 370
Gravity resisting ability of circulation 348
Greenfield, Samuel D., and Friedman, Joseph. Fractured skull 193
  Retropharyngeal abscess 604
  Two cases of foreign body removal 818
Growth, malignant, of parotid gland 214
  of upper jaw and antrum 214
Gymnastics, corrective 832
Gynecological backache 142
Gynecologists in Persia 546

HAINES, Wilbur H., and Taylor, K. P. A. Renorenal reflex 197
Hallock, David H. General postdiphtheritic paralysis in an adult 577
Hamilton, James A. Classification and segregation of male inmates in New York City prisons 757
Hammer, A. Wiese. Thyroid gland and thyrotoxicosis 245
Hay fever 875
Headache, spinal puncture, prevention of 262
Healing agent, new 486

PAGE.
Health and workshops 694
  centre, ideal 297
  influence of clothes on 618
    of reading on 882
  ministry bill 114
  of working children 844
  public effect of inventions on 401
    golf in relation to 822
Hearing, effect of antipyretics on 215
Heart, action of caffeine and its allies on 304
  dilatation of, during or following surgical operations 173
  disease, acute psychoses in 561
    effect of pregnancy on 171
    etiological classification of 171
    rest and exercise in treatment of 128
    use of ouabain in 487
    value of large single doses of digitalis in treatment of 83
  displacement following aspiration pneumonia 43
  in influenza, with electrocardiographic studies 565
  management of, in pneumonia 304
  malignant tumors of, diagnosis of 294
  murmurs, significance of 171
Helminthiasis 897
Hematemesis of esophagus 118
Hematomyelia 140
Hematorrhachis 139
Hematuria, renal 3
  significance of 304
Hemorrhage, cerebral, surgical treatment of, in the newborn 128
  in relation to alkaline reserve capacity of whole blood and carbohydrate mobilization 349
Hepatic margin of safety in bile elimination 564
Hereditary factors in resistance of tuberculosis 565
Hernia, umbilical and ventral, surgery of 213
Herpes zoster 139
Heterophoria, transient, in neurasthenics 148
Highman, Walter J. Modern treatment of acne 137
Hip disease, operative treatment of 632
  dislocations, old, treatment of, by reduction 82
Hippocrates, modern commentaries on 133, 569
Hirshfeld, Samuel, and Neuhof, Harold. Slow intravenous administration of large doses of sodium citrate 95
Histogenesis of syringomyelia 21
Histopathology of porencephalus 840
  of syringomyelia 21
History, value of a study of 826
Hodskins, Morgan B., and Briggs, L. Vernon. Report of neuropsychiatric work at Camp Devens, Mass 749
Honey, antiscorbutic value of 350
Hospital care, new provision for, for mental diseases in Canada 72
  Chinese, pathological conditions in 530
  Commission, New York State, report of 712
  dental surgeon, first 826
  infants', further development of 85
Hospitals, aid for 618
  for insane, brain tumors as seen in 819
  promotion of surgical efficiency in 89
  State grants for 694
Housing question in Great Britain 477
Hoxie, George Howard. Endocrine exhaustion 225
Hühner, Max. Methods of examining for spermatozoa in diagnosis and treatment of sterility 678
Human stock, better 545
Humerus, repair of, by bone graft 706
Humoral theory, origin of 569
Husik, J. S. Phenoiodine in pneumonia, septic infections, and erysipelas 98
Hydatid mole 778
Hyperemia 140
Hypersensitiveness, epinephrine, in hyperthyroidism 174, 564
Hypertension in dyspituitarism 708
  treatment of, further research in 49
  vascular, glucose tolerance test in 174
Hyperthyroidism 383
  diagnosis and treatment of 378
  differentiation of tuberculosis from 264
  epinephrine hypersensitiveness in 174, 564
  from surgical point of view 265
  in child 275
  röntgen ray therapy in 273
  surgical treatment of 263
Hypertonus, bronchiolar, causal factors of emphysema attending 565
Hypertrophy, thymic, under chloroform 262
Hyperuricemia in gout and urinary lithiasis 260
Hypopharynx, tumor of, in infant eleven weeks old 458, 493
Hypophyseal duct tumors 776
  syndromes 360

Page.
Hypophysis cerebri, anatomical consideration of 366
  in relation to thyroid in growth and development of frog larvæ 417
  rôle of, in Graves's disease 370
    in myxedema 370
Hypopituitarism, signs and symptoms of 259
Hyslop, George H. Medical student's problems 336
Hysterectomy, supravaginal, management of cervical stump in 632
Hysteria, traumatic 214
Hysterical chemistry 688

ICTERUS gravis 200
Iglauer, Samuel. Report of a case of laryngocele 464
Ileal regurgitation in chronic intestinal invalid 261
Ileocolostomy in dilatation of cecum and colon 321
Illoway, H. Ileocolostomy and exclusion in dilatation of cecum and colon 321
Imperatori, Charles J. Six cases of foreign bodies in esophagus and bronchi 438
Impetigo of face, treatment of 350
Implantation of testicle, two cases of 232
Impregnation, artificial, by tubal insemination 261
Immunity of bovine udder to carcinoma 578
Immunization, active, against diphtheria 349
  by means of nonvirulent and nontoxic living tubercle bacilli 91
Inbreeding, relation of, to tumor production 781
Incontinence, urinary, acquired, in female, operation for cure of 834
Infant, eleven weeks old, tumor of hypopharynx in 493
  welfare 613
Infancy, acute gastroenteritis in, treatment of 488
Infantile paralysis, early orthopedic treatment of 559
  operative treatment of 558
Infants, further development of hospitals for 85
  intestinal flora of, rôle of certain anaerobes in 86
  misuse of milk in diets of 85
Infection, focal dental, remote manifestations of 349
  focal, diseased tonsils as factor in 465
    iritis, source of 442
    rectal tract as source of 873
    severe, improvement in Graves's disease subsequent to 259
  in wounds, bacteriology of 634
  oral 898
  paratyphoid, diagnosis of 838
  typhoid, diagnosis of 838
Infections, acute, mononuclear leucocytosis in reaction to 321
  gas bacillus, treatment of 487
  septic, phenoiodine in 98
  treatment of 304
Infectious enteritis, acute, with polyneuritic syndrome 40
Influence of reading on health 882
Influenza bacillus, experiments with 562
  complicated by encephalitis lethargica 815
  complicating pregnancy 633
  epidemiology and etiology of 129
  followed by tabes mesenterica 147
  heart in, with electrocardiographic studies 565
  influence of epilepsy on 849
  recrudescence of 260
  studies on 566
  versus typhoid fever 754
Inguinal canal, undescended testicle in 656
Inhalation, fumigation, treatment of syphilis 183
Inoculation, local, production of generalized syphilis in rabbit by 567
Injection, intratracheal, therapeutic 706
  method for treatment of boils 631
  of vas with argyrol 687
  subcutaneous, of red blood cells 131
Injections, intravenous, of acacia glucose solutions 304
  mercurial, in syphilis 213
Injuries of wrist, treatment of 83
Insane, general paralysis of, prognosis in 568
  hospitals for, brain tumors as seen in 819
Insanity, borderline, treatment of 26
Insemination, tubal, artificial impregnation by 261
Insomnia, treatment of 775
Insufficiency of convergence of visual axes 903
Intellectuals, insufficient propagation among 689
Intermittent claudication 140

Page.
Internal medicine, rôle of endocrine system in 233
  secretions 227
    disorders of, in children 239
Interperitoneal adhesions 39
Interpulmonary disease, bronchoscopic diagnosis of 494
Interstitial gland, function of 393
  keratitis, x ray treatment in 262
Intestinal flora of infants, rôle of certain anaerobes in 86
  invalid, chronic, ileal regurgitation, nerves and diet in 261
    chronic, mental factor in 40
  parasites in digestive pathology 488
  stasis 835
    chronic, treatment of 760
Intestine, small, multiple resections of 39
Intradermal protein sensitization test followed by anaphylaxis 44
Intramuscular ossification, traumatic 58
Intranasal operations with reference to postoperative packing 456
  surgery without packing 347
Intraspinal route, treatment of neurosyphilis by 126
Intrathoracic teratomata 564
Intratracheal injection, therapeutic 706
Intravenous injections of acacia glucose solutions 304
  injections of sodium citrate 95
  protein therapy in puerperal septicemia 823
Iodine, influence of, on hypertrophy of thyroid gland 172
Iodoform psychosis, position of, among exogenous predilection types 901
Iritis, focal infection, source of 442
Irritability and stimulation 566

JACKSON, Chevalier, and Spencer, William H. Broncholith and pneumoconiotic material removed from bronchiectatic cavity by peroral bronchoscopy 461
Jacoby, Adolph. Effect of thymus and mammary on menstruation 243
Jaw, upper, malignant growth of 214
Jelliffe, Smith Ely. Hypothyroidism and tabes dorsalis 383
Joint, knee, treatment of wounds of 82
  lesions, Willems treatment of 730
Joints, loose bodies in, treatment of 896

KAHN, Max, Limerick, O. Victor, and Gies, William J. Effect of tobacco on man 809
Kaplan, D. M. Endocrinology, practical application of 593
  Internal secretions 227
Keller, Henry. Study of orthopedic surgery from psychological point of view 735
Kelly, Howard A. Operation for renal calculi 1
Kempf, Edward J. Minimum course in psychopathology for medical students 309
Kennedy, J. W. Who is responsible for sponge count? 607
Keratitis, interstitial, x ray treatment in 262
Kidney decapsulation 348
Kidneys, diseased, newer laboratory methods in diagnosis and prognosis of 196
Kouindjy, Pierre. Treatment of salivary fistulæ by massage and hot air 8
Knee joint injuries, Willems treatment of 734
  wounds, treatment of 82
Knopf, S. Adolphus. The soul of the consumptive 24
Knowlton, Frank P. Review of carbohydrate metabolism as related to diabetes 591

LABOR pains, weak, therapeutics of 835
  treatment of third stage of 896
Laboratory methods, newer, in diagnosis and prognosis of diseased kidneys 196
Labyrinthitis 55
Lacrymal canaliculus, concretion of 584
Lactic acid milk, brief report on 44
Landouzy-Déjérine type of muscular atrophy 780
Landry's paralysis 139
Landsman, Arthur A. Proctological examination as aid to general diagnosis 60
Langerhans, islands of, in diabetes 41
Lapenta, Vincent Anthony. Pathogenesis and physiopathology of gallbladder and biliary tract lesions 5
Laryngocele, case of 464
Laryngoscopy, direct, difficulties encountered in 484, 493
Lazarus, David. Injection method for treatment of boils 631

Page.
Lead in urine in neurocirculatory disturbances 900
League of remembrance 298
Leg, traumatic aneurysm of 350
Leontiasis ossia, unilateral, with optic atrophy 904
Lerrigo, Dr. Charles Henry, physician-author 613
Lesion of occipital lobe simulating cerebellar involvement 540
Lesions, biliary tract, pathogenesis of 5
  gallbladder, pathogenesis of 5
    physiopathology of 5
  of joints, Willems treatment of 730
  of eye produced by light rich in ultraviolet rays 903
  of genitourinary tract, x ray diagnosis of 657
  of urinary tract, aids in diagnosis of 835

LETTERS TO THE EDITORS:
  Bulkley, L. Duncan. Postgraduate medical instruction 710
  Finkelpearl, Henry. Men of science in Russia 220
  Greenfield, Arthur D. Antinarcotic legislation 87
  Highman, Walter James. Fumigation treatment of syphilis 638
  Lewengood, J. Fumigation treatment of syphilis 711
  Lewinski-Corwin, E. H. Habit forming drugs 308
  Prentice, Alfred C. Criticism 843
  Smith, Ethan H. Hysterical antivivisection 782
Leucocytosis, mononuclear, in reaction to acute infections 321
Lever, Charles James, physician-author 400
Levy, Louis Henry. The mouth from gastroenterological viewpoint 14
  Report of case of Gaucher's disease 586
Levy, Moise D. Bronchopulmonary spirochetosis (Castellani) 186
Levyn, Lester. Röntgen diagnosis of lesions of genitourinary tract 657
Life, adult, preventable diseases of 219
  expectation of, past and present 882
Light rich in ultraviolet rays producing eye lesions 903
Limerick, O. Victor, Gies, William J., and Kahn, Max. Effect of tobacco on man 809
Lintz, Joseph. Elephantiasis with reference to syphilis 535
Lipodystrophy, progressive 637
Lipshutz, Benjamin. Suppurative submaxillary adenitis 440
Lisser, Hans. Does pituitary secretion influence development of prostate? 391
Lithiasis of urinary organs 111
  hyperuricemia in 260
Liver, action of various salts on, after their introduction into duodenum 313
Lobe, occipital, lesion of, simulating cerebellar involvement 540
Lowsley, Oswald Swinney. Rôle of prostate and seminal vesicles in arthritis 641
Luetin test, status of 902
Lumbar puncture in treatment of cephalea 215
  vertebra, fifth, sacralization of 780
Lungs, auscultation of, refinement in methods of, by electrical means 560
  syphilis of, simulating tuberculosis 813
Luttinger, Paul. Use of pertussis vaccine 554
Lydston, G. Frank. Two remarkable cases of testicle implantation 232
Lymphocytic cells in sputa 574
Lymphosarcoma, case of 43
Lynch, Robert C. Fluoroscopic bronchoscopy, esophagoscopy, and gastroscopy 437

McCASKEY, Donald. Quartz light therapy in obstinate prostatic affections 647
McNulty, John J. Fatigue—endocrine weariness 288
  Biological or more inclusive sense of therapy 602
Maddren, Russell F. Traumatic intramuscular ossification 58
Malaria, rôle of temperature in causation of 476
  controlled by antimosquito measures 349
  treatment of, from viewpoint of life cycle of causative organism 774
Malarial parasites in thick blood smears, differential diagnosis of 782
Malignancy, esophageal, radium in 493
  new theory of 542
  superficial, röntgen therapy in 845

PAGE.

Malignant bladder disease, radium treatment of 488
  disease of nose and throat 434
  tumors of heart, diagnosis of 294
Male inmates in New York City prisons, classification and segregation of 757
Males, genital tuberculosis in 126
Malt soup extract, antiscorbutic value of. 44
Mammary gland, effect of, on menstruation 243
Man, effect of tobacco on 809
  made diseases 712
  versus microbe 160
Manganese in suppuration 350
Margins, costal, diagnostic significance of inspiratory movements of 83
Marshall, C. J. Measures for control of tuberculosis in cattle 525
Martin, Sergeant Price. Pitfalls in prostatectomy 663
Massage in treatment of salivary fistulæ 8
Mastoid complications 55
  operation, double 431
Mastoiditis, latent 486
  unusual cases of 130
Maydl's operation for exstrophy of bladder 896
Mediastinal emphysema following aspiration pneumonia, cause of heart displacement 43
Mediastinum, neoplasm of 214
Medical education in Great Britain 26
  instruction, postgraduate 710
  lecturers, exchange of, between Holland and England 618
  men organizing in Great Britain 69
  practice, status of, in rural communities 560
  profession, duty of, toward the young. 87
    women in 159
  relief in Russia 296
  research 116
  social service in dispensaries 62, 112
  student's problem 336
  supervision of boarded out child 87
Medicine and agriculture 28
  general, diagnostic value of pupil in 864
  internal, rôle of endocrine system in 233
  modern, blood chemistry in 726
  Osler's principles and practice of 405
  passing of Greek K in language of 341
  simplified 825
  Toronto Academy of 297
Meding, C. B. Colonel Henry Smith, C.I.E., I.M.S. 582
Melman, Ralph J. Tabes mesenterica following influenza 147
Melville, Stanley, and Cyriax, Edgar F. Pathology of socalled sprains of wrist 538
Meningeal phenomena in apical pneumonia 250
  tumor, spinal, diagnosis of 214
Meningitis, cerebrospinal, epidemic 139
  syphilitic, acute 213
  tuberculous, diagnosis of 347
Menninger, Karl A. Ataxic paraplegia with pernicious anemia 812
Menstruation, corpus luteum of 230
  effect of thymus and mammary on 243
Mental cases with endocrine manifestations 417
  defectives in Delaware 639
  diseases, clinics for 27
    provision for hospital care of 72
  disorders in adolescence 418
  factor in chronic intestinal invalid 40
  states in apoplexy 806
Mentally deficient, care of 26
Mercury, injections of, in syphilis 213
Metabolism, basal, in exopthalmic goitre 175
  carbohydrate, as related to diabetes 591
  in diabetes 561
Meyer, William H. Röntgen therapy in superficial malignancy 845
Microbe versus man 160
Midwifery, present position of, in Great Britain 294
Midwives, roll of 477
Migraine epilepsy syndrome, familial distribution of 45
  pathogenesis of 902
Milk, deficiency in heat treated 293
  lactic acid, brief report on 44
  misuse of, in diets of infants and young children 85
  supply in Britain 248
Miller, Edwin B. Rôle of ocular muscles 181
Miller, George I. Blood transfusion up to date 629
Miller, Joseph W. Intranasal operations with special reference to postoperative packing 456
Mills, H. Brooker, Asnis, Eugene J., and Babcock, W. Wayne. Report of case of splenomegaly (Gaucher's disease) 589
Mind and brain 250
  disorders, new provision for hospital care of, in Canada 72

PAGE.

Miners' nystagmus, causes of 215
  prevention of 215
Minton, Henry M. Syphilis of lungs simulating tuberculosis 813
Mole, hairy 904
  hydatid 778
Mononuclear leucocytosis in reaction to acute infections 321
Morality, military 826
Morley, W. H. Corpus luteum of menstruation and pregnancy 230
  Interstitial gland, function of 393
Morphinism, chronic, pathogenesis of 350
Morris, M. Ford. Blood chemistry in modern medicine 726
Mortality, occupational 618
Morticians, national selected 904
Mosher, Eliza M. Mobile V colon, its causes, effects and correction 741
Mothers, endowment of 618
Motor aphasia of cortical or mixed type 637
Mouth from gastroenterological viewpoint 14
Mucous membranes of nose and throat, telangiectases of, with epistaxis 425
Multiple sclerosis in relation to localized encephalitis 781
Mumps, duct sign in 43
  orchitis in, antidiphtheritic serum as preventive of 259
Murmurs, cardiac, significance of 171
Murphy, John W. Qualifications a peroral endoscopist should possess 451
Muscles, ocular, rôle of 181
  respiratory, paralysis of 42
Muscular atrophy, Landouzy-Déjérine type 780
  progressive, Charcot-Marie type 337
Mutch, Jane, and Mutch, N. Studies on bacteriology of alimentary tract 713
Myelitis, ascending compression 350
  of cord, acute and chronic 139
Myocarditis in diphtheria 340
Myoclonus multiplex, acute infectious 563
Myotonia atrophica 190
Myxedema 355
  rôle of hypophysis in 370
Myxosarcoma, malignant, rapidly spreading, with generalized metastasis, cause of priapism 43

NARCOLEPSY, severe recurrent, with encephalitis lethargica 424
Narcotic drug control, in New York 106
  situation 203
Nasal bridge depressed, Gillies' new method in giving support to 448
  fossæ, cancer of 434
  stasis 119
Nasopharynx, cancer of 434
Naylor, Dr. James Ball, physician-author. 118
Neoplasm, mediastinal, x ray and radium in treatment of 214
Nephrectomy, colon injury in 23
Nerve injury, operations for 215
  tissue tumors, structure of 420
    treatment of, by radium 420
Nerves in chronic intestinal invalid 261
  peripheral, injuries to, diagnosis and treatment of 836
Nervous patient from viewpoint of vegetative neurologist 853
  symptoms of polycythemia 839
  system, central, syphilis of 128, 351
Neuhof, Harold, and Hirschfeld, Samuel. Slow intravenous administration of large doses of sodium citrate 95
Neumann, William. Successful surgery in cases with endocrine disturbances 280
Neurasthenia 141
Neurasthenics, transient heterophoria and strabismus in 148
Neurocirculatory disturbances, lead in urine in 900
Neurological conditions cause of backache 138
  percussion hammer, combined 840
Neurologist, vegetative, nervous patient, from viewpoint of 853
Neurology, vegetative, in relation to endocrinology 364
  visceral, in relation to endocrinology 364
Neuronitis, infective 83
Neuropsychiatric work at Camp Devens, Mass. 749
  on Ellis Island 840
Neurosyphilis 140
  diagnosis and treatment of 212
  treatment of, by intraspinal route 126
Newborn, erysipelas in, treatment of 262
Niles, Walter L. Serum treatment of lobar pneumonia 871
Nitrous oxide anesthesia 897
Nodal rhythm with reverse block and paroxysmal tachycardia 565

PAGE.

Nordau, Dr. Max, physician-author 295
Norman, N. Philip. Rationalizing treatment of chronic diseases 555
  Therapeutic management of arteriosclerosis and its relation to etiology of this disease 751
Northrop, Herbert L. Goitre 277
Nose infections, effect of, upon ocular functions of aviators 903
  malignant diseases of 434
  mucous membranes of, telangiectases of, associated with severe epistaxis 425
  operations on, local versus general anesthesia in 444
Novarsenobenzol in treatment of diabetes mellitus 262
Nurse, registered, problem of 161
Nutrition, disturbances of, and circulatory system 131
Nystagmus, miners', causes and prevention of 215

OBITUARY:
  Jacobs, Louis, M.D. 206
  Killian, Professor Gustav, of Berlin 616
  Knott, John Freeman, M.D., of Dublin 298
  Pisek, Godfrey Roger, M.D., Sc.D. 206
  Welch, William H., M.D., of Philadelphia 341
Obstetrics, significance and value of blood pressure in 128
  value of Wassermann reaction in 126
Obstruction, prostatic 704
Occipital lobe, lesion of, simulating cerebellar involvement 540
Occupational disease 612
  mortality 618
  therapy for the tuberculous 12
Ocular functions of aviators, effect of nose and throat infections upon 903
  muscles, rôle of 181
  symptoms, unusual, of encephalitis lethargica 707
O'Day, J. Christopher. Lure of cathartic giving 878
Olives, ripe, canned, cause of botulism 40
Operation, Babcock's, for varicose veins. 897
  double mastoid 431
  for cure of acquired urinary incontinence in female 834
  for renal calculi 1
  Maydl's, for exstrophy of bladder 896
  on congenital cataract, proper time for. 172
  on gallbladder and ducts 633
  on tonsils and adenoids in outdoor clinics in England 470
Operative treatment of hip disease 632
Ophthalmic conditions, blood analysis in 562
Ophthalmology, prize in 159
Optical abuses 163
Oral anesthesia 898
  infection 898
Orchitis in mumps, antidiphtheritic serum as preventive of 259
Organism, causative of malaria 774
Orthopedic treatment of infantile paralysis 559
  surgery from psychological point of view 735
  treatment of burns 633
  viewpoint of sciatica 261
Osborne, Oliver T. Socalled diseases of blood 721
Osler's principles and practice of medicine 405
Ossification, traumatic intramuscular 58
Osteomyelitis 171
Osteosis, single, of long bones, treatment of 127
Otolaryngology, thyroid deficiency in. 283, 326
Otologist, viewpoint of, regarding vertigo 859
Ouabain, use of, in heart disorders 487
Owen, Hubley R. Some observations on treatment of wounds 891

PACHYMENINGITIS cervicalis hypertrophica 140
  chronic 56
Packing, intranasal surgery without 347
  postoperative, in intranasal operations. 456
Paget's disease following trauma 41
Pancoast, Henry K. Nonsurgical methods of treating cancer 746
Pancreatic disease, blood and urine in 41
  syndromes 362
Papillæ, hypertrophied, as cause of pruritus ani 19
Paralysis, facial 55
  general, of insane, prognosis in 568
  infantile, early orthopedic treatment of 559
    operative treatment of 558
  Landry's 139
  of respiratory muscles 42
  postdiphtheritic, general, in adult 577

Page.
Paraplegia, ataxic, with pernicious anemia 812
Parasites, intestinal, in digestive pathology 488
  malarial, in thick blood smears, differential diagnosis of 782
Parathyroid syndromes 356
Paratyphoid infection, diagnosis of 838
Parotid gland, malignant growth of 214
Paroxysmal tachycardia 565
  of ventricular origin 565
Pathogenesis of biliary tract lesions 5
  of chronic morphinism 350
  of gallbladder lesions 5
  of migraine 902
  of pneumonia 728
Pathological conditions, advanced, observed in South China 530
Pathology of socalled sprains of wrist 538
Patterson, Ellen J. Aid to diagnosis of suspected foreign body in esophagus 447
Pediatric practice, benzyl benzoate in 835
Peebles, Dr. James Martin, physician-author 824
Pellagra, causation of, and quality of protein 883
  endocrines in 416
Pellagroid syndromes, endocrines in 416
Penology, new 615
Peripheral nerves, injuries to, diagnosis and treatment of 836
Peritonitis, diffuse suppurative 838
Peritonsillar abscess, etiology of 902
Permanganate, silver, in gonorrhea 896
Pernicious anemia, age and sex in 614
Peroral bronchoscopy in removing foreign bodies from bronchiectatic cavity 461
  endoscopist, qualifications of 451, 489
Pertussis vaccine, use of 554
Pestilence, passing of 688
Pfeiffer, William. Management of breech presentation 177
Pharmacodynamics, endocrinology in 259
Pharmacological action of salvarsan 704
  study of benzyl benzoate 126
Phenoiodine in pneumonia, septic infections, and erysipelas 98
  in puerperal sepsis and postoperative pneumonia 101
Phlegmon, ligneous, of Reclus 56
Phthisis pulmonalis 103

Physician-Authors:

  Bridges, Dr. Robert Seymour 543
  Brown, Dr. John 29
  Butler, Dr. George F. 204
  Crabbe, Dr. George 73
  Eastman, Dr. Charles Alexander 252
  Gould, Dr. George Milbury 883
  Lerrigo, Dr. Charles Henry 613
  Lever, Charles James 400
  Naylor, Dr. James Ball 118
  Nordau, Dr. Max 295
  Peebles, Dr. James Martin 824
  Quackenbos, Dr. John Duncan 338
  Smollett, Dr. Tobias George 472
  Veresaev, Dr. Vikenty 161
  Watson, Dr. Edward Willard 762
Physics, institute of 71
Physiopathology of gallbladder lesions 5
Pineal gland 239
  effect of feeding, upon development of albino rat 259
  syndromes 361
Pituitary gland, specific action of 228, 376
  secretion, influence of, on development of prostate 391
Plague stalks abroad 760
Pneuma and books of Hippocratic corpus 133
Pneumoconiotic material removed from bronchiectatic cavity by peroral bronchoscopy 461
Pneumonia, acute lobar, specific diagnosis and treatment of 60
  apical, meningeal phenomena in 250
  aspiration, followed by mediastinal emphysema 43
  bacteriology and pathogenesis of 728
  in woman with habitual high blood pressure 128
  lobar, serum treatment of 871
  management of heart in 304
  phenoiodine in 98
  points of prognostic importance in 744
  postoperative, phenoiodine in 101
  surgical complications of 527
  vaccine treatment of 172
Pneumothorax, induced, in treatment of pulmonary tuberculosis 521
  treatment of pulmonary tuberculosis 517
Poisoning by arsine 262
  by senecio 215
Poliomyelitis 635
  acute 139

Page.
Polycythemia with nervous symptoms 839
Polyneuritic syndrome in acute infectious enteritis 40
Porencephalus, histopathology of 840
Porter, William Henry. Animal versus vegetable protein 47
Postdiphtheritic paralysis, general, in adult 577
Postgraduate beginnings in this country 755
Postoperative packing in intranasal operations 347, 456
Pottenger, Francis M. Relation of endocrinology to vegetative or visceral neurology 364
Practice, general, visual errors in 862
Practitioner, busy 253
Precipitins for egg albumen in stools 86
Pregnancy complicated by influenza 633
  corpus luteum of 230
  effect of, on cardiopathies 171
  glycosuria with 260
  in rudimentary horn of uterus 128
  pyelitis in 779
  toxicoses of 899
Pregnant uterus, action of quinine on 836
Prehallux, human 171
Presentation, breech, management of 177
Priapism, resulting from malignant myxosarcoma 43
Prisons, New York City, male inmates in, classification and segregation of 757
Pritchard, H. B. Fractures 610
Protological examination as aid to general diagnosis 60
Propagation, insufficient, among intellectuals 689
Prostate, carcinoma of, treatment of 705
  development of, influenced by pituitary secretion 391
  rôle of, in arthritis 641
Prostatectomy, considerations regarding 704
  difficulties encountered in 659
  pitfalls in 663
Prostatic affections, obstinate, quartz light therapy in 647
  obstruction 704
Prostatitis, chronic, etiological factors of 661
Prostitution, public, suppression of, factor in spread of venereal disease 648
Protein, animal versus vegetable 47
  food, effect of, on increased blood pressure 562
  sensitization test, intradermal, followed by anaphylaxis 44
  therapy, intravenous, in puerperal septicemia 823
Proteins of barley, oat, rye and wheat kernels, nutritive value of 897
Pruritus ani, cryptitis as cause of 19
  hypertrophied papillæ as cause of 19
Pseudotumors of uveal tract 838
Psychic management of persons with cardiac disorders 898
Psychoanalysis, practice of, by unqualified persons 618
Psychopathology, minimum course in, for medical students 309
  relationship of, to endocrines 386
Psychoses, acute, in diseases of heart 561
Psychology and the grocer 904
  in regard to orthopedic surgery 735
Psychosis, arteriosclerotic, atypical form of 899
  following surgical operation 635
Public Health Committee of New York Academy of Medicine, report of, on medical social service in dispensaries 62, 112
Pudenda, ulcerating granuloma of 213
Puerperal sepsis, phenoiodine in 101
  septicemia, intravenous protein therapy in 823
Pulmonary tuberculosis in aged 780
  induced pneumothorax in treatment of 521
  latent, in its various disguises 144
  local tenderness and supraclavicular adenitis in 261
  pneumothorax treatment of 517
Pulse rate, in exophthalmic goitre 175
Puncture of vas 687
Pupil, diagnostic value of, in general medicine 864
  dilatation and the sensory pathways 636
Purpura during serum disease 350
  hemorrhagica with streptococcic angina and multiple infarcts of skin and subcutaneous tissue 43
Pyelitis in pregnancy 779
Pyle, Walter L. Report of series of remarkable cases of injury to eyeball 816
Pyloric stenosis, early radioscopic signs of 40
  ulcers, treatment of 633

QUACKENBOS, Dr. John Duncan, physician-author 338
Quartz light therapy in obstinate prostatic affections 647
Quinine, action of, on pregnant uterus 836
  preventive use of 303

Page.
RADIATION in treatment of toxic goitre 247
Radioscopic signs of pyloric stenosis 40
Radium, effect of, on normal brain tissue 568
  emanation, effects of, on brains of animals 419
  in benign conditions of uterus 706
  in esophageal malignancy 493
  in mediastinal neoplasm 214
  in treatment of goitre 127
  therapy with reference to structure of nerve tissue tumors 420
  treatment of malignant bladder disease 488
    of nerve tissue tumors 420
Rays, ultraviolet, in light causing eye lesions 903
Reactions, emotional, in epileptics 785
Reamputation, technic of 558
Reclus, ligneous phlegmon of 56
Recrudescence of influenza 260
Rectal tract as source of focal infection 873
Rectum, cancer of, treatment of 39
  cancerous, excision of, through vaginal section 21
Red Cross Society, British, crusade of 618
Reed, Charles A. L. Phases of visceral displacements in general practice 497
Reede, Edward Hiram. Nervous patient from viewpoint of vegetative neurologist 853
Reflex, renorenal 197
Regeneration, blood, after simple anemia as influenced by various dietary factors 568
Regurgitation, ileal, in chronic intestinal invalid 261
Renal calculi, operation for 1
  hematuria 3
  tuberculosis, surgical treatment of 778
Renaud, George L. Hay fever 875
Renorenal reflex 197
Research, further, in treatment of hypertension 49
Resection of tarsus and conjunctiva, (combined excision) 454
Resections, multiple, of small intestine 39
Respiratory diseases, effect of cold on 612
  muscles, paralysis of 42
Rest in treatment of heart disease 128
Retrograde stretching in treatment of impermeable cardiospasm 568
Retropharyngeal abscess 604
Rhythm, nodal, with reverse block and paroxysmal tachycardia 565
Riddell, William Renwick. Origin of word syphilis 650
Ridpath, Robert F. Difficulties encountered in direct laryngoscopy 484
  Practical points in diagnosis of sinus diseases from viewpoint of general practitioner 460
Roberts, John B. Promotion of surgical efficiency in hospitals 89
Rodman, Harry. Diseased tonsils as factor in focal infection 466
Röntgen diagnosis of lesion of genitourinary tract 657
  ray therapy in hyperthyroidism 273
    in superficial malignancy 845
  rays, therapeutic action of 564
Rose, Robert Hugh. Acid gastritis 12
Rosenberger, Randle C. Examination of water from Ganges River, India 199
Rosenbluth, M. Serious ear conditions and complications in ambulatory patients 54
Rosenheck, Charles. Backache due to neurological conditions 138
Rout, Ettie A. Prevention of venereal disease 49
Rubenstone, A. I. Newer laboratory methods in diagnosis and prognosis of diseased kidneys 196
Rupture of urethra, treatment of 82
Rutz, Anthony A. Report of case of hysterical aphagia 793

SACRALIZATION of fifth lumbar vertebra 780
Salacity, Shaker, psychologically interpreted 800
Saliva in diabetics 40
Salivary fistulæ, treatment of, by massage and hot air 8
Salts, various, action of, on liver after their introduction into duodenum 313
Salvarsan, pharmacological action of 704
  silver, in treatment of syphilis 836
Sanders, A. S. Vas puncture, injection of vas with argyrol and seminal vesiculotomy 687
Saphir, J. F. Cryptitis and hypertrophied papillæ as causes of pruritus ani 19

Page.
Sarcoma, primary, of thymus 42
Satterthwaite, Thomas E. Postgraduate beginnings in this country 755
Scalp, seborrhea of 156
Scarlatina 148
Schroeder, Theodore. Shaker celibacy and salacity psychologically interpreted 800
Schwartz, Louis H. Visual errors in general practice 862
Sciatica from an orthopedic viewpoint 261
Scleroderma, treatment of 836
Sclerosis, disseminated, etiology of 779
  multiple, in relation to localized encephalitis 781
  pyramidal, following electric burns 351
Seborrhea of scalp 156
Secretion, pituitary, influence of, on development of prostate 391
Section, vaginal, excision of cancerous rectum through 21
Secretions, internal 227
  disorders of, in children 239
Selenium in treatment of inoperable cancer 559
Seminal vesicles, rôle of, in arthritis 641
  vesiculitis 666, 835
  vesiculotomy 687
Sensory aphasia 796
  pathways 636
Senecio poisoning 215
Sepsis, puerperal, phenoiodine in 101
Septic abortion, treatment of 836
  infections, phenoiodine in 98
Septicemia, puerperal, intravenous protein therapy in 823
Serum, antidiphtheritic, as preventive of orchitis in mumps 259
  antihemorrhagic 486
  disease, purpura during 350
  of fracture cases in treatment of delayed union 838
  treatment of lobar pneumonia 871
Sex in pernicious anemia 614
Shaker celibacy and salacity psychologically interpreted 800
Shapiro, Isidor F. New healing agent 486
Sheehan, J. Eastman. Gillies new method in giving support to depressed nasal bridge and columella 448
Shuman, John W. Gastric ulcer and cancer 10
Shumway, Edward A. Report of two cases of concretion of lacrymal canaliculus 584
Siegel, Alvin E. Thymic disease 290
Sign, duct, in mumps 43
Signs, early radioscopic, of pyloric stenosis 40
  of hypopituitarism 259
Silver permanganate in gonorrhea 896
  salvarsan in treatment of syphilis 836
Singultus 789
Sinus disease 55
  diagnosis of 460
  lateral, gunshot wound of 453
Sinuses, bone, persistent, treatment of 81
Skin involvement in breast cancer 350
  squamous cell epithelioma of 894
Skull, fractured 193
Smith, Colonel Henry, C.I.E., I.M.S. 582
Smollett, Dr. Tobias George, physician-author 472
Social service in relation to clinic 129
  medical, in dispensaries 62, 112

SOCIETIES, PROCEEDINGS OF:
  American Pediatric Society 42, 84
  Association of American Peroral Endoscopists 489
  Association of American Physicians 560
  Medical Society of State of New York 216, 263, 305
  New York Academy of Medicine 173
  New York Neurological Society 351, 419, 635, 707, 839
Sodium chloride concentration in blood and urine 487
  citrate, intravenous administration of 95
Solis-Cohen, Myer. Latent pulmonary tuberculosis in its various disguises 144
Spencer, William H., and Jackson, Chevalier. Broncholith and pneumoconiotic material removed from bronchiectatic cavity by peroral bronchoscopy 461
Spermatocele 350
Spermatozoa, examination for, in diagnosis and treatment of sterility 678
Spina bifida, operability of 303
  time for surgical intervention in 303
Spinal cord, gunshot wounds of 634
  fluid, significance of yellow 156
  meningeal tumor, diagnosis of 214
  puncture headache, prevention of 262

Page
Spirillum of relapsing fever, developmental forms of 129
Spirochetosis, bronchopulmonary, (Castellani) 186
Splanchnoptosis, phases of 498
Splenectomy, blood findings in child five years after 84
Splenomegaly (Gaucher's disease), report of case of 589
Sponge count, responsibility for 607
Sprains of wrist, pathology of 538
Sputa, albumin, lymphocytic cells and tubercle bacilli in 574
Sputum, cytological and chemical examination of, in diagnosis of asthma and asthmatoid states 347
Squamous cell epithelioma of skin 894
Stasis, intestinal 835
  chronic, treatment of 760
  nasal 119
Stenosis of esophagus 427
  pyloric, early radioscopic signs of 40
  valvular, incomplete, as cause of severe stricture of esophagus 781
Sterility, diagnosis and treatment of 678, 702
Stevens, J. Thompson. Management of toxic goitre with radiation 247
Stimulation and irritability 566
Stivelman, B. Induced pneumothorax in treatment of pulmonary tuberculosis 521
Stock, human, better 545
Stomatitis 215
Stomach, contents of 348
Stools, precipitins for egg albumen in 86
Strabismus in neurasthenics 148
Strachstein, A. Etiological factors of chronic prostatitis 661
Stragnell, Gregory. Relationship of psychopathology to endocrines 386
Strauss, Spencer G. Endocrine gland extracts 395, 468
Streptococcic angina with purpura hemorrhagica and multiple infarcts of skin and subcutaneous tissue 43
Streptococci, different types of, in war wounds 126
Stretching, retrograde, in treatment of impermeable cardiospasm 568
Stricture of esophagus 490, 781
  treatment of 81
  urethral, treatment of 81
Stuttering 352
Subarachnoid spaces, walling off 902
Submaxillary adenitis, suppurative 440
Subphrenic abscess, treatment of 633
Sunstroke 778
Suppuration, manganese in 350
Suppurative cystitis, treatment of 82
  peritonitis, diffuse 837
  submaxillary adenitis 440
Supraclavicular adenitis in pulmonary tuberculosis 261
Suprarenal glands, epinephrine content of, in anaphylaxis 759
  syndromes 361
Suprarenals 377
Supravaginal hysterectomy, management of cervical stump in 632
Surgeon, dental, first hospital 826
Surgery, goitre, practical points in 263
  in cases with endocrine disturbances 280
  in exophthalmic goitre 264
  in hyperthyroidism 265
  in treatment of cerebral hemorrhage in newborn 128
  of exophthalmic goitre 266, 330, 777
  of renal tuberculosis 778
  intranasal, without packing 347
  orthopedic, from psychological point of view 735
Surgical complications of pneumonia 527
  efficiency in hospitals, promotion of 89
  operation, psychosis following 635
  operations on aged 844
  rubber goods, toxicological aspects of 334
  treatment of ulcer 705
Syncope under chloroform 262
Syndrome, effort, in children and young adults 84
  migraine-epilepsy, familial distribution of 45
  polyneuritic, in acute infectious enteritis 40
Syphilis, clinical, of central nervous system 351
  continuous mercurial injections in 213
  early, course of treatment for 213
  experimental, in rabbits 704
  fumigation treatment of 638, 711
  generalized, production of, in rabbit by local inoculation 567
  latent 779
  nervous, diagnosis and treatment of 212
  of central nervous system, treatment of 128
  of lungs simulating tuberculosis 813
  origin of word 650
  primary, diagnosis of 704
  silver salvarsan in treatment of 836

Page
  treatment of, by fumigation inhalation 183
  Wassermann fast, clinical study of 212
  with reference to elephantiasis 535
Syphilitic meningitis, acute 213
  psychoses 709
Syringomyelia, histopathology and histogenesis of 21
System, circulatory, in neutritional disturbances 131
  endocrine, rôle of, in internal medicine 233

TABES dorsalis 141, 383
  juvenile 708
  mesenterica following influenza 147
Tachycardia, paroxysmal, and nodal rhythm with reverse block 565
  of ventricular origin, and its association with coronary thrombosis 565
Takeuchi, Kumpei. Albumin, lymphocytic cells and tubercle bacilli in sputa 574
Tarsus and conjunctiva, resection of, (combined excision) 454
Taylor, K. P. A., and Haines, Wilbur H. Renorenal reflex 197
Tea tasters' cough 904
Technic of simpler and safer tonsillectomies 485
Teeth, defective, in connection with alopecia 120
Telangiectases of face associated with severe epistaxis 425
  of mucous membranes of nose and throat associated with severe epistaxis 425
Temperature, rôle of, in causation of malaria 476
Temporal arteries, tortuous 837
Tenner, Arthur S. Resection of tarsus and conjunctiva (combined excision) with new instruments 454
Teratomata, intrathoracic 564
Test, blood sugar tolerance, as aid in diagnosis of gastrointestinal cancer 563
  complement fixation, preparation of antigens from cultures of tubercle bacillus for 566
  glucose tolerance, in vascular hypertension 174
  intradermal protein sensitization, followed by anaphylaxis 44
  luetin, status of 902
Testicle implantation, two cases of 232
  undescended, in inguinal canal 656
Tetany 357
Theory, humoral, origin of 569
Therapeutic intratracheal injection 706
  management of arteriosclerosis 751
Therapeutics of weak labor pains 835
Therapy, bacterial vaccine, in children 881
  biological 602
  ductless gland, observations upon 262
  intravenous protein, in puerperal septicemia 823
  radium, with reference to structure of nerve tissue tumors 420
  röntgen ray, in hyperthyroidism 273
Thermometers old and new 544
Thomson, J. Oscar. Advanced pathological conditions observed in South China 530
Thoracoplasty in tuberculosis 465
Throat infections, effect of, upon ocular functions of aviators 903
  malignant diseases of 434
  operations on, local versus general anesthesia in 444
  telangiectases of mucous membranes of 425
Throats, human, inoculation of, with avirulent diphtheria bacilli 900
Thrombosis, coronary, associated with paroxysmal tachycardia of ventricular origin 565
Thymic disease 290
  hypertrophy under chloroform 262
Thymus gland 239
  effect of, on menstruation 243
  primary sarcoma of 42
  syndromes 359
Thyroadrenal exhaustion, acute 431
Thyroid deficiency in otolaryngology 283, 326
  diabetes 262
  gland 228, 239, 245, 376
  hypertrophy of, influence of iodine on 172
  in relation to hypophysis in growth and development of frog larvae 417
  related to adrenals 389
  syndromes 354
Thyroiditis, acute, after erysipelas 262
Thyrotoxicosis 245
Tibial tubercle affections 559
Tilton, Benjamin T. Dangers to life associated with gallstone disease and their prevention 4
Timme, Walter, Survey of endocrinology 374
Tobacco, effect of, on man 809
Tolerance test, blood sugar, in diagnosis of gastrointestinal cancer 563

Page.
Tonal attributes, study of 837
Tongue indications for treatment of disease 40
Tonsil, cancer of 434
Tonsillectomies, simpler and safer technic of 485
Tonsillectomy, followed by adhesions of velum palati to pharynx 170
Tonsils, diseased, as factor in focal infection 465
  indictions for removal of 487
  local anesthesia of 347
  operations on, in outdoor clinics in England 470
  x ray treatment of 484
Tousey, Sinclair. Generator of constant current for production of x rays 529
Toxemias, effects of, upon the eye 128
Toxic goitre, management of, with radiation 247
    medical treatment of 412
Toxicological aspects of surgical rubber goods 334
Toxicoses of pregnancy 899
Trauma, compressive 781
  Paget's disease following 41
Traumasthenia 141
Traumatic abdomen 837
  aneurysm of leg 350
  hysteria 214
  intramuscular ossification 58
Transfusion, blood 29, 83, 629
    reactions after 513
Tracheoaerocele, case of 496
Trachoma, etiology of, in Eastern Kentucky 903
Tract, gastrointestinal, treatment of disease of 216, 217
  genitourinary, diseases of 684
  rectal, as source of focal infection 873
  uveal, pseudotumors of 838
Traction diverticulum of esophagus 489
Traction-pulsion diverticulum of esophagus 463
Tubercle, affections, tibial 559
  bacilli, active immunization by means of 91
    in sputa 574
  bacillus, preparation of antigens from cultures of 566
Tuberculosis, administrative treatment of 404
  differentiation of, from hyperthyroidism 264
  educational campaign against, in Pennsylvania 608
  genital, in males 126
  in cattle, control of 525
  influence of smoke abatement upon 542
  occupational therapy in treatment of 12
  of eye in army 903
  problem of present day 30
  propaganda against 405
  pulmonary, in aged 780
    induced pneumothorax in treatment of 521
    latent, in its various disguises 144
    local tenderness and supraclavicular adenitis in 261
    pneumothorax treatment of 517
  renal, surgical treatment of 778
  resistance of, hereditary factors in 565
  syphilis of lungs simulating 813
  thoracoplasty in 465
Tuberculous meningitis, diagnosis of, chemical examination of cerebrospinal fluid in 347
  persons not wanted in Texas 75
Tumor, brain, simulating lethargic encephalitis 779
  of hypopharynx 458, 493
  production, relation of inbreeding to 781
  spinal meningeal, diagnosis of 214
Tumors, brain, as seen in hospitals for insane 819
  hypophyseal duct 776
  malignant, of heart, diagnosis of 294
  nerve tissue, treatment of by radium 420
  of female bladder, treatment of 81

Page.
Tuttle, Homer. Ulcer of cornea 332
  Unusual cataract operation 452
Typhoid fever, diet in 557
    versus influenza 754
  infection, diagnosis of 838
Typhoidal abscesses, induced 172
Typhus fever 473
  special measures against introduction of 640

UDDER, bovine, immunity of, to carcinoma 578
Ulcer, gastric, dietetic treatment of 567
    etiology and treatment of 127
    x ray diagnosis of 10
  of cornea 332
  surgical treatment of 705
Ulcers, pyloric and duodenal, treatment of 633
Ultraviolet rays in light causing eye lesions 903
Union, delayed, serum of fracture cases in treatment of 838
Ureteral calculi 706
Urethra, ruptured, treatment of 82
Urethral stricture, treatment of 81
Urinary calculus, treatment of 558
  incontinence, acquired, in female, operation for cure of 834
  lithiasis, hyperuricemia in 260
  organs, lithiasis of 111
  tract, aids in diagnosis of lesions of 835
Urine excretion, influence of injections of acacia glucose solutions on 304
  in pancreatic disease 41
  lead in, in neurocirculatory disturbances 900
  sodium chloride concentration in 487
Urticaria after specific fevers 350
Uterus, benign conditions of, radium in 706
  cancer of, in young women 303
  pregnant, action of quinine on 836
  rudimentary horn of, pregnancy in 128
Uveal tract, pseudotumors of 838

VACCINE, bacterial, therapy in children 881
    pertussis, use of 554
  treatment for pneumonia 172
    of rheumatoid arthritis 215
Vaccines bacterial, treatment of common cold with 559
Vaginal section, excision of cancerous rectum through 21
Valvular stenosis, incomplete, as cause of severe stricture of esophagus 781
Van Hook, Weller. Colon injury in nephrectomy 23
Varicose veins and hematemesis of esophagus 118
    Babcock's operation for 897
Vas, injection of, with argyrol 687
  puncture 687
Vascular hypertension, glucose tolerance test in 174
Vegetative neurology in relation to endocrinology 364
Veins, varicose, and hematemesis of esophagus 118
    Babcock's operation for 897
Velum palati, adhesion of, to pharynx following tonsillectomy or adenoidectomy 170
Venereal disease 618, 694
    prevention of 49
    suppression of public prostitution factor in spread of 648
Ventricular origin of paroxysmal tachycardia and its association with coronary thrombosis 565
Veresaev, Dr. Vikenty, physician-author 161
Vertebra, fifth lumbar, sacralization of 780
Vertigo from viewpoint of otologist 859
Vesical calculi 838
Vesiculitis, seminal 666, 835

Page.
Vesiculotomy, seminal 687
Vesicles, seminal, rôle of, in arthritis 641
Vincent's angina 215
Visceral displacements, phases of, in general practice 497
  neurology in relation to endocrinology 364
Visual axes, insufficiency of convergence of 903
  errors in general practice 862
Vitamine, antiscorbutic 305
  fat soluble 305
  B, water soluble 306
Voices, ghostly 784

WARNINGS, unregarded 74
  Wassermann reaction, value of, in obstetrics 126
Wassermann-fast syphilis, clinical study of 212
Water, examination of, from Ganges River, India 199
  soluble vitamine B 306
Waterson, Davina. Marie Curie 820
Watson, Dr. Edward Willard, physician-author 762
Watson, W. R. General versus local anesthesia in operations on nose and throat 444
Weanling, diet of 822
Wells, Walter A. Vertigo from point of view of otologist 859
Wheelon, Homer. Interpretation of blood pressure variations 505
Willems treatment of joint lesions 730, 734
Wishart, D. J. Gibb. Tumor of hypopharynx in child of eleven weeks 458
Witchcraft, delusion of 640
Witherbee, W. D. Principles involved in x ray treatment of tonsils 484
Wolbarst, Abr. L. Suppression of public prostitution factor in spread of venereal disease 648
Women in medical profession 159
Wound healing, comparative study of 141
Wounds, accidental, treatment of 304
  gunshot, of lateral sinus 453
    of spinal cord 634
  infected, bacteriology of 634
  of knee joint, treatment of 82
  treatment of 891
  war, different types of streptococci in 126
Wright, Jonathan. Modern commentaries on Hippocrates 133, 569
Wrist injuries, treatment of 83
  sprains of, pathology of 538
Wurtz, Walter J. M. Malignant diseases of nose and throat with special reference to cancer of nasal fossæ, nasopharynx and tonsil 434

X RAY diagnosis of gastric ulcer and cancer 10
      of lesions of genitourinary tract 657
    therapy in hyperthyroidism 273
      treatment in interstitial keratitis 262
      of acne vulgaris 778
      of tonsils, principles involved in 484
X rays in mediastinal neoplasm 214
  in superficial malignancy 845
  production of, by generator of constant current 529
  therapeutic action of 564
  treatment of goitre by 777

YELLOW fever, passing of 688
  Young, Anne. Treatment of malaria from viewpoint of life cycle of causation organism 774

ZIGLER, M. Seminal vesicultis 666

INDEX TO PAGES

January 1st	1–44
January 8th	45–88
January 15th	89–132
January 22nd	133–176
January 29th	177–220
February 5th	221–264
February 12th	265–308
February 19th	309–352
March 2nd	353–424
March 16th	425–496
April 6th	497–568
April 20th	569–640
May 4th	641–712
May 18th	713–784
June 1st	785–844
June 15th	845–904

LIST OF ILLUSTRATIONS TO VOLUME CXIII

PAGE

Adrenals and … elation between. Two Illustratio … 390

Bacteriolo … ary tract. One Illustration … 717

… noconiotic material re… hiectatic cavity by per… Two Illustrations......462

… spirochetosis (Castellani). … llustrations 187

Cancerous rectum excised through vaginal section. Five Illustrations..................21–22

Carcinoma, immunity of bovine udder to. Four Illustrations 579–580

Cathartic giving, lure of. One Illustration....880

Colon injury in nephrectomy. Two Illustrations 23

Cryptitis and hypertrophied papillæ as causes of pruritus ani. One Illustration............ 20

Curie, Marie. Portrait......................820

Endocrine syndromes, classical. Two Illustrations 358–359

Esophagus, traction-pulsion diverticulum of. Two Illustrations 463

Foreign body removed, two cases of. Three Illustrations 818-819

Gastric ulcer and cancer. Seven Illustrations.10–12

Gillies new method in giving support to depressed nasal bridge and columella. Eight Illustrations 448–450

Hypophysis cerebri, anatomical consideration of. One Illustration 367

Ileocolostomy and exclusion in dilatation of cecum and colon. One Illustration.........324

PAGE

Interpretation of blood pressure variations. Five Illustrations 507–509

Kempf, Edward J. Portrait.................406

Laryngocele, report of case of. Two Illustrations 465

Law, Frederick M. Portrait 478

Malaria, treatment of, from viewpoint of life cycle of causative organism. One Illustration 774

Mobile V colon, its causes, effects and correction. Four Illustrations...............742–743

Myotonia atrophica. Four Illustrations...191–192

Pathological conditions, advanced, in South China. Four Illustrations............532–533

Pisek, Godfrey Roger. Portrait..............206

Pneumonia, points of prognostic importance in. One Illustration 745

Renal calculi, operation for. Eight Illustrations.2–3

Resection of tarsus and conjunctiva (combined excision) with new instruments. Five Illustrations 455–456

Röntgen therapy in superficial malignancy. Ten Illustrations 845–848

Skull, fractured. One Illustration............194

Smith, Col. Henry, C. I. E., I. M. S. Portrait.582

Studies of action of various salts on liver after their introduction into duodenum. Sixteen Illustrations 314–320

Willems treatment of joint lesions. Eight Illustrations 731–734

Wound, gunshot, of lateral sinus. Two Illustrations 453

Wrist, pathology of socalled sprains of. One Illustration 539